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India — Reform on Hold
Vijay Joshi and I. M. D. Little

Abstract. In 1991, India embarked on economic reforms that have the potential to transform its future economic development. This paper is an evaluation of these reforms. It analyzes the progress made in the last seven years, considers the likelihood of its continuance, and suggests an agenda for the future. The authors conclude that while there has been significant movement in some areas, the reforms, as a whole, have been slow and unbalanced and are as yet highly incomplete. They are fairly pessimistic about the political feasibility of the reforms and sceptical about greater devolution of powers and responsibilities to the States as the way forward.

The Ancien Regime and the Need for Reform

On the economic front, India’s post-independence history has been one of disappointed hopes and expectations. Performance has been inadequate as regards both growth and poverty alleviation. India has lagged massively behind the East Asian superperformers in both respects; indeed she has lagged behind even the average of middle and low-income countries of East Asia. From 1950 to 1980, India grew at around 3.6 percent per year (per capita 1.3 percent per year), dubbed the “Hindu rate of growth” in view of its seeming resistance to economic policies. Growth did speed up to 5.7 percent per year (per capita about 3.5 percent per year) in the 1980s but on the basis of unsustainable macroeconomic policies that resulted in a crisis in 1991. Nor was there much compensation for slow overall growth in the form of improvement of the standard of living of the poor. Even now, India has about 350 million people below the poverty line—more than one third of India’s population and a similar percentage of the

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1 For an excellent overview of India’s economic performance and causes thereof see Bhagwati (1993).

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world’s poor. As regards broader indicators of welfare such as literacy and health, notwithstanding some improvement, the absolute levels remain disturbingly low.\footnote{While we would stand by the overall thrust of the above paragraph, it should not be taken to imply that our assessment of India’s post-independence performance is entirely negative. Per capita incomes did grow faster than they did in the pre-independence period. Self-sufficiency was achieved in foodgrains, albeit at a very modest level of consumption. The share of manufacturing in GDP increased from one sixth in 1950/51 to one fifth in 1990/91 and the country acquired a diversified and in some ways quite sophisticated industrial base. Over the same period, life expectancy rose from 32 years to 60 years; infant mortality fell from 175 per 1,000 live births to 100; and the literacy rate increased from 17 to 52 percent. The proportion of people below a modest poverty line fell substantially. Nevertheless, India’s progress is clearly dismal in relation to the hopes held and targets set at independence and in relation to the achievements of successful developing countries. For example, life expectancy and infant mortality are not much better in India now than they were in Republic of Korea in 1960 and adult literacy is significantly worse.}

**Growth Performance**

We focus here on the causes of India’s growth performance because high growth is a necessary condition for poverty alleviation.\footnote{High growth by itself is not enough. It is important, if the poor are to benefit, that growth be labor-demanding.} We can divide the sources of growth schematically into the rate of saving and investment and the productivity of investment (see Table 1).

<table>
<thead>
<tr>
<th>Table 1: Investment and Savings as Percentages of GDP</th>
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<tbody>
<tr>
<td><strong>Investment (current prices, % GDP)</strong></td>
</tr>
<tr>
<td>10.2</td>
</tr>
<tr>
<td><strong>Investment (constant 1980/81 prices, % GDP)</strong></td>
</tr>
<tr>
<td>14.7</td>
</tr>
<tr>
<td><strong>Domestic Savings ( % GDP)</strong></td>
</tr>
<tr>
<td>10.4</td>
</tr>
<tr>
<td><strong>GDP growth (% p.a., 10-year averages)</strong></td>
</tr>
<tr>
<td>3.6</td>
</tr>
</tbody>
</table>

Note: Investment figures are those that are adjusted to equal the estimates of domestic plus foreign savings in the national accounts. Source: Government of India, C.S.O. National Accounts Statistics.

From 1950/51 to 1980/81, India’s growth rate was roughly constant but saving and investment (at current prices) rates more than doubled. In the 1980s, the growth rate increased significantly without any increase in saving and investment rates but that was for special reasons. Liberalization of India’s highly controlled economy began in a small way in the 1980s with favorable effects on efficiency. High growth
in that decade was also the result of the strong (and eventually unsustainable) pressure of demand created by fiscal expansion. Thus, considering the four decades from 1950/51 as a whole, we can justifiably conclude that the low productivity of investment rather than the low rate of saving and investment is the principal explanation for India’s slow growth.\footnote{It will be seen in Table 1 that while saving and investment (at current prices) rates more than doubled from 1950/51 to 1980/81, the rate of investment at constant prices increased by only about 50 percent, the difference being explained by an increase in the relative price of capital goods. The decline in the productivity of investment is obviously sharper if the investment rate is measured at current prices. We think that is the correct interpretation as we are ultimately interested in the return to consumption sacrificed. The rise in the relative price of capital goods was partly a product of India’s inward-looking, “heavy industry” strategy and is more properly captured in the falling productivity of investment.}

In our opinion, the low productivity of investment in India was mainly the result of its “planning strategy” whose intellectual underpinnings came from Fabian Socialist ideas and Soviet planning models. The strategy was characterized by a distrust of the price mechanism, a preference for administrative solutions to economic problems, a belief in “self-reliance” that negated the efficient use of foreign trade and technology, and an emphasis on a dominant and expanding public sector to spearhead saving and investment. Such ideas were generally fashionable in the 1950s and may even have had some merit at the time.\footnote{Empirical studies that decompose India’s growth into the contributions of factor accumulation and total factor productivity (TFP) support the above observations. TFP growth was negligible until 1980 but increased markedly after that (see Ahluwalia 1991 and Chopra et al. 1995). Ahluwalia attributes the rise in TFP in the 1980s to the (mild) liberalization that began in the late 1970s. Note also the calculations of Joshi and Little (1994, ch.13), which are in the spirit of endogenous growth theories. Joshi and Little estimated rates of return to investment in two periods, 1960/61-1975/76 and 1976/77-1986/87. They found that the rates of return to public investment, especially in manufacturing, were very low in both periods. In contrast, rates of return to investment in private manufacturing nearly doubled from the first period to the next, to a level comparable to those in industrial countries. Joshi and Little attribute the increase in GDP growth to (i) greater aggregate demand pressures; (ii) the rise in public infrastructure investment which, by reducing bottlenecks, contributed to raising productivity; and (iii) the limited liberalization that had some favorable effects on efficiency.} What is remarkable is that India’s policies did not adapt to reality until the 1980s.

Recent economic writing has called attention to the importance of primary health care and education in generating fast growth. India’s slow progress in improving health and literacy may be regarded as an independent cause of low productivity, though it must also be emphasized that such improvements cannot contribute

\footnote{It may well have been right at the time to assign the state a major role in creating “the inducement to invest” by fostering Rosenstein-Rodan style balanced growth. As Bhagwati puts it, “...Rosenstein-Rodan focused on balanced growth in an ingenious argument for coordination of decentralized investment decisions, each held up in a Nash equilibrium but made feasible through governmentally contrived cooperative equilibrium...” (see Rosenstein-Rodan 1943, Bhagwati 1993). But after the First Five-Year Plan, Indian planning went far beyond the above strategy in the direction of physical planning, strict control and regulation of private sector activities, and extensive public ownership of industry. At the same time, the proper role of the state in the provision of primary health and education was neglected.}
much without an increase in the demand for labor. Table 2 details India’s inadequate comparative performance with regard to relevant social indicators.\footnote{Primary health and education are direct constituents of welfare as well as major requisites of economic progress. Some Indian States like Kerala have made big strides in these areas but most States have failed miserably (see Drèze and Sen 1995).}

We comment below on the two pillars of Indian planning, controls, and extensive public ownership.

<table>
<thead>
<tr>
<th></th>
<th>Life Expectancy (at birth)</th>
<th>Infant Mortality Rate (per 1,000 births)</th>
<th>Adult Literacy Rate (Age 15+)</th>
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<tbody>
<tr>
<td>India</td>
<td>44</td>
<td>59</td>
<td>165</td>
</tr>
<tr>
<td>China, People’s Rep. of</td>
<td>47</td>
<td>69</td>
<td>150</td>
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<td>Korea, Rep. of</td>
<td>54</td>
<td>71</td>
<td>85</td>
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<tr>
<td>Thailand</td>
<td>52</td>
<td>69</td>
<td>103</td>
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Controls

The origins of controls lay in the collectivist and statist philosophies that had a special resonance in many post-colonial societies. Once controls were established, the dynamics of rent-seeking took over and grew to permeate every aspect of business activity (for further details, see Joshi and Little 1994, ch.2).

Industry

Industry was regulated by three sets of licensing policies that controlled the entry and growth of firms—capacity licensing, monopoly control, and small-scale industry reservations—and, in addition, by foreign trade controls (dealt with below), location controls, and price and distribution controls. Capacity licensing was originally undertaken mainly as an instrument of planning, supposedly but wholly unrealistically to ensure that supply matched demand. Prior clearance in the form of a license was required for routine business decisions such as setting up a plant, expanding or relocating production, or introducing a new product. Firms frequently put in bogus applications simply to forestall competition. No consistent economic criteria
were ever employed. First come, first served and lobbying by large industrial concerns were the most important determinants of licensing decisions.

Monopoly control was introduced to prevent the concentration of economic power and to curb restrictive practices. Under the Monopoly and Restrictive Trade Practices Act of 1969, firms with assets above a certain threshold (defined in nominal rupee terms and altered very infrequently) had to receive clearances before entering or expanding any line of production. The effect of this regulation was to limit the growth of firms and thus to prevent the realization of economies of scale and to discourage expenditure on research and development. In many cases, by limiting the exercise of countervailing power, competition was reduced, not increased.

Concessions to small-scale industry were introduced principally to promote employment on the doubtful theory that small-scale firms are labor-intensive. Assistance was given to them in various ways, including tax and interest rate concessions, but the most important method was the reservation of a large number of activities for the small-scale sector. This served to curtail competition from and expansion of large firms; indeed, even the expansion of small firms was limited since they stood to lose concessions as soon as they reached threshold size.

In addition to licensing controls, industry also faced full or partial price and distribution controls, for example in petroleum products, coal, electricity, fertilizers, iron and steel, cement, and a range of other items. (Some of these controls still survive.) The objectives of these policies were to provide poorer groups with certain basic necessities cheaply and to provide key inputs for the development process at low prices. These controls have had various deleterious effects, e.g., shortages of several commodities, low profitability that prevented modernization, the survival of inefficient producers, mounting government subsidies, and blackmarkets that indirectly reduced the government’s tax revenue.

Industry also bore the brunt of various regulations that interfered with the working of factor markets. The labor market was (and is) characterized not only by wage regulations but by stringent regulations on hiring and firing. The Industrial Disputes Act makes it very difficult to dismiss workers even for clear cases of misbehavior. The Act also requires companies to seek the permission of the government (normally the State government) to retrench workers. For political reasons, this is seldom given. The introduction of the government into labor management in medium and large firms reduces the flexibility of the labor market and can only be to the detriment of the whole workforce, which outnumbers those protected by 20 times or more. It should also be noted here that exit in Indian industry was as difficult as entry or expansion. Both labor retrenchment and bankruptcy procedures were extremely cumbersome and politicized, making it almost impossible to close down a business legally.
Foreign Trade

Imports were comprehensively controlled as will be described below. Before 1980, controls were usually the binding constraint on imports and internal prices were higher than landed cost. This tendency was partially reversed in the 1980s when Indian tariffs were raised to very high levels. The above system produced an internal market for manufactures that was highly protected. This protection was only weakly counteracted by a haphazard system of export subsidies; in general, the tendency was for the effective rate of protection of exports to be much lower than that of domestic sales, and often negative. In addition to the standard “static” resource allocation costs, the system led to delays, corruption and rent-seeking, monopoly, and retardation of technical progress due to isolation from global competition. The effect was to reduce the growth rate not only of exports—India’s share of world exports fell from 2 percent at independence to 0.4 percent by the end of the 1980s—but also of GDP since the latter became effectively constrained by the growth of agriculture. In addition, by increasing the capital intensity of techniques and products, this regime reduced the demand for labor and impeded the attack on poverty.

India’s attitude to foreign investment was equally isolationist. The Foreign Exchange Regulation Act passed in 1973 restricted foreign ownership in Indian companies to 40 percent, and introduced many other wide-ranging impediments to the activities of foreign investors. The consequence was that inflows of foreign investment were reduced to a trickle (about $100 million per year).

Financial Markets

Government intervention in this sector had its origin in pre-independence nationalist thinking. Colonial banking was perceived to be biased in favor of working-capital loans to trade and large capitalist enterprises, and against rural areas and “the common man”. This legacy, combined with socialist ideology, culminated in the nationalization of all banks in 1969. After that, the banks (and the financial system generally) were heavily regulated. There were nevertheless some notable achievements. There was a dramatic expansion of banks throughout the country, which contributed to increasing financial savings. The worst elements of “financial repression” were avoided, largely because inflation remained reasonably low and real interest rates were only mildly negative. But while performance was satisfactory in resource mobilization, it was very unsatisfactory as regards resource allocation. The low productivity of investment in India has many causes but inefficient credit allocation by the banking sector was undoubtedly one of them.
By 1991, the country had erected an unprofitable, inefficient, and financially unsound banking sector.\(^8\) What led to this state of affairs? The following list contains some external and some internal causes, a distinction that is convenient but superficial as most of the internal shortcomings were a natural response to the institutional and regulatory environment:

(i) **Preemption of Bank Resources.** High reserve requirements were imposed on banks, to be held in investments whose yield barely covered the cost of funds.\(^9\) In 1991, an average of 50 percent of deposits was captured in this way; the marginal preemption was even higher, a staggering 63.5 percent.

(ii) **Directed Credit.** Banks were required to allocate up to 40 percent of their lending to certain “priority” sectors at concessional rates of interest.

(iii) **Administered Interest Rates.** Virtually all interest rates offered and charged by banks were stipulated by the government.

(iv) **Lax Regulation and Supervision.** The supervisory system was lax, though ironically the degree of micro-interference was high. There was an absence of clear, internationally comparable accounting norms for banks, so that the essential elements of financial discipline were missing.

(v) **Lack of Competition.** There was a large number of banks but little competition between them.

(vi) **Low Internal and Organizational Efficiency.** Banks had high operating costs. Contributory factors included rampant overmanning, strong unions, bad industrial relations, and inadequate incentives for managerial competence.

(vii) As with any system of controls, bank credit was subject to political manipulation.

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\(^8\) A few facts will suffice. The average return on assets in the second half of the 1980s was about 0.15 percent, an extraordinarily low figure by world standards. Return on equity was higher (about 9.5 percent) but that was simply a reflection of the low capitalization of Indian banks. In the same period, capital and reserves averaged about 1.5 percent of assets, compared to 4-6 percent in other Asian countries (World Bank 1990; see also Joshi and Little 1994, 1996).

\(^9\) There are two reserve ratios in India: the cash reserve ratio (CRR) and the statutory reserve ratio (SLR) stipulating the proportion of bank deposits to be held in the form of cash and government securities, respectively.
The result of the above factors was a steady deterioration in the quality of bank portfolios. By 1991 reform of the system was urgent as the banking system was virtually bankrupt and ill-suited to the task of allocating credit or even performing ordinary banking functions efficiently.

Banks are at the heart of the financial system but an efficient financial sector also needs other financial institutions such as insurance companies, mutual funds, and primary and secondary debt and equity markets. Government intervention was pervasive in all these areas but again of the wrong kind in the sense that there was no attention to efficiency, financial soundness, or probity. Debt markets remained undeveloped. The development finance institutions that were established to make up for this lack suffered from all the problems of the banks. Insurance markets were also monopolistic and suffered from excessive premia, inadequate variety of cover, over-staffing, and poor customer service. Primary and secondary equity markets were heavily controlled but nevertheless suffered from nontransparent trading methods and offered poor investor protection (for details, see Joshi and Little 1996).

The Public Sector

In theory, it can be argued that efficiency and productivity are ownership-neutral. In practice, this has proved not to be so because the agency problem in the public sector is far more serious than in the private sector. There is an insoluble problem of reconciling managerial autonomy and public accountability. Some countries have achieved a better compromise than others. India is among the worst.

The domain of the Indian public sector has been extensive and went beyond utilities and “commanding height” industries to include consumer goods production. Many “sick” private sector units were also taken over by the government. The share of the public sector in GDP rose from 8 percent in 1960/61 to 24 percent in 1990/91. It also absorbed a lot of investment but gave little back, e.g., in the 1980s it accounted for about 50 percent of investment while producing about 25 percent of GDP. The inefficiency of the public sector has been well documented. For example, the returns to investment in public sector manufacturing from 1976/77 to 1986/87 have been estimated as 3-5 percent compared with 17-23 percent in private sector manufacturing.10 A large number of public enterprises made losses. A good many of these loss-makers were technically “sick”, i.e., had negative net worth.

Public sector inefficiency was the product of a dual process. On one hand, the public manager’s freedom to manage was far more severely constricted than that of his private sector counterpart. On the other hand, his incentives to be efficient (and penalties for being inefficient) were also much weaker. Lack of managerial freedom and autonomy followed from public ownership as this entailed being directly under

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10 For methodology and details of the calculations, see Joshi and Little (1994, ch. 13).
the supervision of a minister and his civil servants who were formally accountable to Parliament. The practical results of this were:

(i) Public enterprises were expected to achieve a wide variety of noncommercial objectives, e.g., employment maximization.

(ii) Since members of Parliament and ministers had electoral aims, public enterprises tended to become instruments of political leverage.

(iii) Accountability to Parliament took the form of extraordinarily intrusive monitoring through parliamentary questions and detailed audits. Since these processes emphasized rigid rules, managers tended to become ultracautious and adopted a “don’t rock the boat” attitude.

(iv) All except the most minor decisions regarding investment and recruitment of senior personnel were made by or required the approval of higher-level bodies such as the Public Investment Board and the Public Enterprise Selection Board.

Public enterprises were “compensated” for these restrictions on autonomy by preferential treatment vis-à-vis private sector companies and by soft budget constraints. But these practices merely exacerbated managerial slack and x-inefficiency.

**The 1991 Crisis**

In the 1980s, particularly in the second half of the decade, the interventionist style of government gradually began to change. There was some dilution of controls, especially those affecting industry, and exchange rate policy became more flexible after 1986. Growth of exports and industrial production increased substantially. Unfortunately the decade also witnessed a sharp reversal in India’s erstwhile fiscal prudence resulting in large fiscal deficits and current account deficits. The resulting fragile macroeconomic situation led to a full-scale crisis at the end of the decade triggered by a minor temporary increase in the price of oil that followed the Iraqi invasion of Kuwait.

The economy grew rapidly in the 1980s. GDP growth rose from the long-standing rate of 3.5 percent per year to 5.7 percent. Some of the growth was unsustainable, being the direct result of the fiscal deficits; but part of it was the product of desirable policy changes, in particular the deregulation of controls. These reforms, half-hearted and piecemeal though they were, were proving to be effective, but
founded in the macroeconomic crisis at the end of the decade.\textsuperscript{11} More comprehensive reforms were needed but in a stable fiscal setting.

A program of reform was initiated in July 1991 by the minority Congress government headed by Narasimha Rao, with Manmohan Singh, a distinguished economist civil servant as Finance Minister. This government ruled for almost five years, to be succeeded by another minority government led by the United Front coalition.

**Macroeconomic Stabilization**

Table 3 presents the salient macroeconomic indicators for the recent past.

Stabilization was essential in 1991 because there was a severe macroeconomic crisis. The need for stabilization was further increased by the fact that structural reform could itself be expected to produce macroeconomic pressures.\textsuperscript{12} Short-term stabilization was carried out in an orthodox manner by means of expenditure reduction and expenditure switching policies. Fiscal and monetary contraction were undertaken, combined with a 19 percent devaluation of the rupee, supported by a stand-by credit from the International Monetary Fund.

| Table 3: Growth, Inflation, Fiscal Deficits, and Balance of Payments |
|---|---|---|---|---|---|
| GDP (% p.a.) | | | | | |
| Agriculture | 6.0 | 5.4 | 0.8 | 7.5 | 6.8 | 5.0 |
| Industry | 3.4 | 3.8 | -2.3 | 7.9 | 3.9 | 2.0 |
| Services | 7.5 | 7.2 | -1.3 | 6.4 | 8.0 | 5.7 |
| Inflation (% p.a.) (WPI) | | | | | |
| Public Sector Gross Deficit (% GDP) | 12.5 | 12.3 | 9.6 | 9.2 | 9.5 | 10.0 |
| Primary Deficit | 6.3 | 3.5 | 2.7 | 3.0 | 3.5 | |
| Current Account Deficit (% GDP) | 2.9 | 3.2 | 0.4 | 1.1 | 1.2 | 1.5 |

*Figures for 1997/98 are provisional and in the case of the public sector deficit are authors’ estimates.

\textsuperscript{11} For a detailed review of the causes of the crisis, see Joshi and Little (1994, ch.7).

\textsuperscript{12} Examples are trade reforms that reduce revenue and financial reforms, which raise the cost of government borrowing. Admittedly, other structural reforms help the macroeconomic problem. For instance, a reform of public enterprises can affect the budget favorably. But in the short run, the adverse effects may outweigh the favorable effects.
Output performance has been satisfactory. After a sharp slowdown in 1991/92 as a result of the contractionary policies (and erratic weather), there was a recovery, at first intermittent, then strong and broadbased. From 1992/93-1996/97 (i.e., leaving out the crisis year 1991/92), overall growth was 6.8 percent per year and industrial growth 8 percent, evidently a much better performance than in many other developing countries embarking on post-crisis reform programs. The growth rate was not much higher than in the second half of the 1980s but with an important difference. Growth in the 1980s was based on a mountain of borrowing. Post-reform growth has been accompanied by some fiscal correction and by moderate current account deficits. Even so, as discussed below, the long-run fiscal position is not satisfactory.

Inflation has proved to be rather stubborn, averaging about 8 percent per year from 1992/93 to 1996/97. It has fallen sharply since 1995/96 but we doubt if that is an enduring improvement. The balance of payments has improved dramatically. In 1991/92, the current account deficit fell from 3.5 percent to 0.4 percent of GDP but this was almost entirely because of deflation and import compression. The improvement was sustained, however, and the current account deficit has been about 1.5 percent of GDP or less in succeeding years despite the recovery of output. Until 1995/96, this was mainly the result of strong export growth. In 1996/97 however, export growth fell sharply to 4 percent and the current account deficit stayed low due to buoyant invisible current inflows, particularly private transfers. In addition to the current account turnaround, there was a large surge in private capital inflows starting in 1993/94, resulting in a sizeable accumulation of foreign exchange reserves ($22 billion at the end of 1996/97 as compared to $2.3 billion at the end of 1990/91).

The rate of growth of 5.7 percent per year achieved in the 1980s could not be sustained without major reforms. After a slowdown caused by essential crisis measures, output has again grown by more than 6 percent per year from 1992/93-1996/97. The critical question is whether the stabilization measures, together with the structural reforms already made, make this rate of growth sustainable. We discuss the relevant macroeconomic issues under the headings of fiscal adjustment, inflation, and balance of payments management.13

Fiscal Adjustment

In 1991, India was quite evidently in an unsustainable fiscal position. Since then, the fiscal deficit has been reduced but it is still too high from a long-run standpoint.

The primary deficit of the nonfinancial public sector was 6.3 percent of GDP in 1990/91. It has since been reduced to about 3 percent (see Table 3). If the real interest and growth rates are assumed to be 6 percent, then fiscal sustainability (taken to

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13 For a detailed assessment of stabilization policies since 1991, see Joshi and Little (1996, ch.2).
mean stabilizing the debt-GDP ratio at the current level) requires that the primary
deficit should be no higher than about 1 percent of GDP, approximately equal to the
inflation tax at an acceptable inflation rate of about 5 percent per year. Sustainability
is not a particularly ambitious aim. It would be desirable to raise the growth rate by
reducing the debt-GDP ratio and crowding in private investment.\textsuperscript{14} This implies a
sharper fiscal adjustment. India should aim at eliminating the primary deficit of the
public sector and reducing interest payments by privatization.\textsuperscript{15}

If we assume that the Center has to bear the entire fiscal adjustment, its primary
deficit of about 1 percent has to be converted into a primary surplus of 2 percent.
(This in turn is roughly equivalent to a reduction in the Center’s overall deficit to
3 percent of GDP and in its revenue deficit to zero.) But it is surely to be desired that
the States and the public enterprises should also contribute to fiscal adjustment. So
far they have not done so. The deficits of the States have remained in the region of
3–4 percent of GDP. The performance of the public sector enterprises (PSEs) contin-
ues to be dismal: neither the profits of the profit makers nor the losses of the loss
makers have shown any significant change.

As important as the quantity of fiscal adjustment is its quality. It is vital that the
reduction of the fiscal deficit be achieved without cutting capital expenditure or ex-
penditure on social sectors. It is significant in this context that such fall as there has
been in the fiscal deficit since 1990/91 has come principally from a reduction in pub-
lic investment, particularly in infrastructure. Social sector expenditures have been
protected (apart from the crisis year of 1991/92) but there is a strong case for in-
creasing them.

In our judgment the following measures are critical in securing the needed fisc-
al adjustment:

(i) widening the base of direct taxes, possibly by presumptive taxation;

(ii) reducing food and fertilizer subsidies, the former by better targeting, the
latter as part of a package to free agricultural prices and close down
nonviable fertilizer plants;

(iii) arresting the growth of the wage expense in government administration
by a freeze on new employment and by pay restraint;

\textsuperscript{14} The transition to a lower fiscal deficit is a task of some delicacy since it has to be dovetailed with the use of
fiscal policy for short-run stabilization. It is obviously important to speed up fiscal adjustment during an upswing
when there is a natural tendency for the budget to improve. In this context, it is clear that India wasted the opportunity
for deficit reduction opened up during the strong recovery from 1994/95-1996/97.

\textsuperscript{15} For a discussion of the above calculations and their underlying assumptions and methodology, see Joshi and
Little (1996, ch.2).
(iv) eliminating the massive hidden subsidies in the provision of publicly provided goods and services such as water and electricity; and

(v) selling off public enterprises and prime urban land owned by the government.\textsuperscript{16}

These measures will require action at all levels of the public sector. The Center is in a strong position because it can harden the budget constraints of both the States and the public sector enterprises by reducing budget support (through direct grants and loans) and restricting their market borrowing. But there are obvious political limits to doing so. Moreover, a crude squeeze on State and public enterprise finances would be counterproductive if it reduces capital formation and social sector spending. In the long run, therefore, addressing the fiscal problem requires an overhaul of Center-State financial relations to give proper incentives to resource mobilization and expenditure control by both tiers of government.

In sum, India’s fiscal problem is not insoluble. The extent of soft budgets and hidden subsidies is so large that the required adjustment could be achieved quite rapidly without compromising efficiency and equity. Of course, the political constraints are severe. But unless they are overcome, the reform process could grind to a halt.

\textbf{Inflation}

A disturbing feature of inflation in the 1990s is that it remained high despite a run of good harvests. While a broadly monetary explanation of inflation makes sense, one other contributing factor deserves mention. The growing strength of the farm lobby has resulted in procurement prices for food being raised even in good years. This has led to mounting food stocks with high carrying costs and further to higher issue prices out of concern for the fiscal deficit. As indexation is increasing, this has added a pronounced cost-push element to the inflationary process. Moderation of the inflationary process in India would thus seem to require unwinding the distortionary interventions of the government in the food market, in addition to pursuing responsible fiscal and monetary policies.

Inflation has fallen below 8 percent since 1995/96. This was the result of monetary tightening but also of a freeze on all administered prices including food and fuel in anticipation of the 1996 elections. Tight money also drove up interest rates creating the dilemma considered below.

\textsuperscript{16}Subsidies are dealt with below. Privatization would give a fiscal benefit because public enterprises could be sold at prices significantly above the present value of their profits in public ownership. Further details and analysis of these measures can be found in Joshi and Little (1996) and Joshi (1998).
Keeping the trend of inflation low clearly requires firm control over the rate of monetary expansion. If, however, fiscal deficits are high, real interest rates are driven up and private investment is squeezed. If high rates of private investment are necessary for rapid growth, this in effect means that low inflation becomes incompatible with high growth. This is not a new problem in Indian policymaking. Monetary policy in India has for a long time been guided by the objective of “making room” for fiscal deficits without letting the money supply get out of control. What has happened after reform is that the inflation/growth tradeoff has sharpened because of financial sector liberalization, which has both raised real interest rates and increased their sensitivity to changes in fiscal deficits for any given rate of monetary expansion. The above considerations underscore the need for fiscal consolidation if rapid growth and low inflation are to be successfully combined.

Balance of Payments Management

In 1991, India had an unsustainable current account deficit that had its roots in the fiscal slippage of the 1980s. This was brought down by using orthodox policies. The new problem that India has had to get used to, in common with many other reforming countries, is the volatility of capital flows. From 1993/94 to 1996/97, India had by its previous standards, a very large inflow of portfolio equity capital (about $3-4 billion annually). This was handled without nominal exchange rate appreciation, by a mixture of sterilized and unsterilized intervention. This was a sensible decision since an immediate nominal and real exchange rate appreciation would have hurt export competitiveness. Some real appreciation did take place over short periods as a result of the increased money supply growth that was caused by unsterilized intervention. But such changes were reversed by exchange rate depreciations engineered or allowed by the authorities.¹⁷

Without doubt, the balance of payments position in 1996/97 constitutes a large improvement over that five years earlier: the current account deficit is moderate despite rapid growth and the external debt position has improved both quantitatively and qualitatively. An important question concerning future balance of payments policy is whether the size of the current account deficit should be an object of policy concern. The Common Minimum Programme of the United Front government estimated the infrastructure investment requirements of the country to be in the region of $200 billion over five years, some of which would have to be met from foreign savings (see United Front 1996). The Programme also asserted that “the nation needs and has the capacity to absorb at least $10 billion a year as foreign direct investment”. If we allow for portfolio inflows and assume the annual net capital inflow to

¹⁷ We think that India has the appropriate exchange rate regime for its circumstances, viz. a managed float. For further discussion, see Joshi and Little (1996).
build up to $20 billion per annum in 5 years, and project GDP forward at 6 percent per annum over the same period, we get an implied current account deficit of about 5 percent of GDP in 2000/01, a much higher level than would traditionally be regarded as safe.

There is a fashionable view that the size of the current account deficit should be a matter of indifference so long as it corresponds to a private rather than a public deficit. The rationale is that the former would be self-correcting since the private sector can be expected to respect its intertemporal budget constraints. But India’s public accounts are not yet in good order; and international experience, for example in Chile in the early 1980s and East Asia in 1997, shows that unsound private borrowing and lending followed by crises and crashes can and do occur. Experience also shows that the pool of internationally mobile net long-term funds is limited and that countries that have successfully run persistent current account deficits of 6 percent of GDP or more are the exception rather than the rule (see Feldstein and Horioka 1980).18

We suggest that India should be wary of running current account deficits higher than say 3 percent of GDP unless long-term real export growth can be stepped up significantly above 10 percent per year. This is so even if capital inflows are not debt-creating. While the latter have better risk-sharing characteristics than bonds, they require a considerably higher rate of return, taking one year with another. It follows from the above that India cannot safely rely on foreign savings alone to secure a substantial increase in the rate of investment—an increase in the domestic savings rate will also be necessary.

Financial Sector Reform

Until 1991, India suffered many of the features of financial repression. This did not impede the mobilization of savings because inflation was low and there was a rapid spread of banks. But financial repression manifested itself both in the highly inefficient allocation of savings and in the unsound condition of many financial institutions. Since 1991, India has made a good start with financial sector reform. But

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18 Canada, Australia, and Argentina ran large current account deficits in the 19th century but long-term capital then was not constrained by exchange risk. Some East Asian countries are currently running current account deficits in the region of 6-8 percent of GDP but they have considerably higher growth rates of exports than India. They are also far more open: in their case a deficit of 6-8 percent of GDP corresponds to 25-30 percent of exports; in India’s case it would correspond to 60-80 percent of exports. Moreover, these deficits are probably too high and make these economies vulnerable to capital account volatility. The Feldstein-Horioka paper has been subject to critical scrutiny (see for example Artis and Bayoumi 1990) but its central insight has been amply confirmed by the experience of Mexico and East Asia in the 1990s.
there is still a long way to go in creating an efficient financial sector suitable for a sophisticated modern economy.\textsuperscript{19}

**The Banking Sector**

The reform strategy in the banking sector has been guided by the aim of removing financial controls while simultaneously restoring the health of the banking system and instituting systems of prudential regulation.

Prudential regulation is necessary to deal with the moral hazard problem inherent in the provision of lender of last resort facilities, and this is so \textit{a fortiori} during the process of financial liberalization when increased competition for deposits and loans increases the incentive of banks to take risks. In India, prudential regulation has taken two forms. First, banks have been subjected to internationally agreed accounting norms regarding income recognition, provisioning, and capital adequacy. Secondly, a supervisory authority, the Board of Financial Supervision (BFS), has been constituted. Understandably, the new authority still has a long way to go in devising the information and monitoring structures appropriate for an increasingly complex financial environment. Our main criticism concerns the fact that the BFS has been made part of the Reserve Bank. It would have been better to set up a separate institution as this would have given it a better chance of being independent and not crossing wires with the RBI’s monetary policy functions.

The application of the new accounting norms in 1992 exposed the true state of the banking system. Nonperforming assets amounted to 25 percent of the total loan portfolio. Half of the banks had negative net profits and/or negative net worth. It was recognized that restoring the health of the banking system required both a “stock” solution (i.e., a restoration of net worth) and a “flow” solution (i.e., an improvement in future profitability that could only follow from financial liberalization). Restoration of net worth was achieved by capital infusions from the budget. By 1995, most banks had achieved positive net profits and were on the way to achieving an 8 percent capital adequacy ratio. The critical question is whether this represents a durable and fundamental improvement. We remain to be persuaded. The overall level of nonperforming assets is still in the region of 20 percent of the banks’ total portfolio. Debt recovery is inadequate and the debt tribunals set up for the purpose are barely functioning. A substantial proportion of bank credit is still locked up in sick industries. There is little evidence of cost-cutting. The weakest banks still remain a serious problem.

We now turn to financial liberalization. A key change has been to reduce the high level of the SLR, which led to low profitability and high spreads. The average SLR has now been brought down from 38.5 percent to 29.5 percent, the near-term

\textsuperscript{19} For a detailed assessment of post-1991 financial sector reform, see Joshi and Little (1996, ch.4).
objective being to reduce it further to 25 percent. The change has been achieved fairly smoothly since interest rates on government securities have been increased in tandem, thus increasing the banks’ incentive to voluntarily hold these securities. There is obviously an associated fiscal cost, so further rapid progress in this direction depends on the success of fiscal adjustment.

There have been significant moves toward interest rate deregulation. First, in the key market for government borrowing, most long-term securities and a growing proportion of treasury bills are now sold by auction. Secondly, commercial bank interest rates have been substantially liberalized. The lending rate for loans larger than Rs 2 lakhs (approximately US$5,000) has been completely freed though two concessional rates are still in place for loans of smaller size. The deposit rate has also been freed for deposits with maturity longer than one year. There is still some way to go in reducing the involvement of the RBI in the primary market for government debt. But further moves in this direction are now dependent on the success of fiscal consolidation.

While there has generally been progress in interest rate deregulation, this cannot be said of the system of directed credit, which remains largely unreformed. Formally, banks are supposed to direct 40 percent of their credit to “priority sectors”, notably agriculture and small-scale industry; in addition, there are various sub-targets, e.g., 18 percent of bank credit should be loans to agriculture. Though in the last five years there has been some benign neglect as regards the banks’ achievement of these targets, there has been no systematic overhaul.20

The record of directed credit in promoting efficiency and equity is discouraging. The efficiency case for directed credit rests on arguments such as breaking the monopoly power of rural money lenders, informational imperfections, and externalities in the provision of financial infrastructure. The financial viability of directed-credit institutions within a reasonable time horizon is surely one test (though obviously not a decisive one) of their success in overcoming these market imperfections. On this test, the record of the last 25 years has not been encouraging. Commercial banks have met directed credit targets but only at the cost of continuing and large cross subsidies and above-average incidence of bad debts. Most regional rural banks and cooperative banks are in a state of financial collapse.21 Econometric studies of the impact of directed credit on efficiency have also produced disappointing results (see Binswanger and Khandker 1992).

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20 Note that agriculture and small-scale industry are served not only by the directed credit of commercial banks but also by other special-purpose institutions such as regional rural banks (RRBs) and cooperative banks. Our criticism covers the directed credit system broadly construed.

21 In 1994, there were 196 RRBs (with 15,000 branches). Of these, 170 were making losses and 150 had negative net worth. Overdues were 60 percent of debt-service due. A similar story applies to cooperative banks except in a few States such as Punjab, Kerala, and Maharashtra. In 1992, their overdues amounted to 34 percent of advances and 50 percent of debt service.
The equity-based argument for directed credit has also not withstood the test of experience. It has proved very difficult to prevent cheap credit being captured by rich farmers. This applies also to credit-based poverty alleviation programs such as the Integrated Rural Development Programme (IRDP). A further important problem with IRDP is that the income generated is insecure and risky. Since poor households do not have the required debt capacity, IRDP borrowing often gets them deeper into debt than they were to start with (see Drèze 1990a). Experience shows that poverty alleviation objectives are likely to be more effectively furthered by other types of intervention, for example, public employment programs (which have the merit of incorporating a self-selection element), social security schemes that target vulnerable groups, and policies to improve primary health and education.

Concessional credit to small-scale industry comes from banks (as part of their priority sector targets) and various development finance institutions.22 The direct evidence of the relative efficiency of small firms is discouraging (see Little, Mazumdar, and Page 1987; and Goldar 1988). Not only that, the share of institutional credit in total borrowing has been found to be negatively correlated with total factor productivity (see Goldar 1988). We think that subsidized directed credit to small-scale industry should now be discontinued for the following reasons:

(i) small firms, particularly in urban areas, are served by the urban informal credit market, which is both large and efficient;

(ii) the small-scale sector contains many modern enterprises that are commercially on all fours with medium-scale and large-scale firms;

(iii) the portfolio quality and financial viability of many State-level development finance institutions (DFIs) have been severely compromised by concessional lending to small firms; and

(iv) the measures to overcome informational asymmetries by means of institutional credit create more problems than they solve.

An important aspect of financial sector reform in India concerns moves to increase competition among banks. India has a large number of commercial banks but in practice there is very little competition between them. This has now changed to some extent as a result of interest rate deregulation, softening of consortium lending arrangements, and opening up of the banking sector to entry by new private banks (with appropriate restrictions as regards initial capital size). Even so, in our

22 Many of these DFIs are controlled by State governments but receive subsidized refinance from either the RBI or the Small Industries Development Bank, which is itself a subsidiary of the Industrial Development Bank of India.
judgment, stronger policies to promote competition are required, for example, greater freedom for new banks in opening branches and fewer restrictions on the operations of nonbank financial intermediaries. But the most important change that is required to promote competition and efficiency is privatization. In theory, publicly owned banks could compete vigorously with one another and with private banks and the pressures of competition would bring managerial autonomy in their train. In practice, this is far-fetched. Given the inherited advantages of public-sector banks in terms of branch coverage and customer base, the competitive threat from private banks is too distant to deter interference by politicians and bureaucrats.

The Nonbank Financial Sector

The Capital Market

Development of the capital market required reduction in intrusive micro-intervention on the one hand and regulation to ensure investor protection on the other. A regulatory body, the Securities and Exchange Board of India (SEBI) was set up in 1988 and given statutory powers in 1992. In the primary market for equity, statutory control of the floatation and pricing of issues was abolished in 1992, subject to appropriate disclosure rules. Since then SEBI has concentrated on enacting and enforcing these. Another of SEBI’s principal tasks has been to improve the trading and settlement procedures in the secondary market for equity. The Bombay Stock Exchange (BSE), the premier exchange in the country, was well-known for its opaque trading practices. Settlement procedures were equally deficient, and the registration of stock took several months due to bad deliveries or deliberate delay on the part of company registrars.

Improvement has been slow but significant. The transparency of trading practices has improved as a result of the introduction of screen-based trading and the establishment of the National Stock Exchange that competes with the BSE. Another important recent development is acceptance of the principle of setting up a central depository for securities, thus paving the way for their eventual “dematerialization”, so that all transfers of shares can be made electronically.

Progress in developing the debt market has been even slower. Changes such as the deregulation of interest rates and reduction in government preemption of funds have revived the debt market to some extent. Nevertheless, demand for corporate debt is still constrained by the portfolio restrictions imposed by the government on domestic insurance and provident fund institutions as well as on foreign institutional investors. Since financing India’s infrastructure requirements will call for substantial long-term finance, revival and development of the debt market must be regarded as an urgent priority.
Development Finance Institutions

The DFIs share several features with commercial banks that have resulted in making both themselves and the companies that borrow from them financially weak. First, until recently, they faced little competition as borrowers or as lenders. As borrowers, they shared in the allocation of the funds captured from banks by the government. As lenders, they operated on a consortium basis, leaving their clients little choice. Since 1991, some competition has been introduced. Their privileged access to funds has been withdrawn and consortium requirements have also been significantly diluted. Secondly, the DFIs, particularly those at the State level, face severe governmental constraints on their autonomy. As with banks, privatization would be desirable. Thirdly, like banks they have suffered from soft accounting norms and lending practices. The consequence was the creation of many weak, highly leveraged firms and a deterioration of DFI portfolio quality. Recently, accounting norms similar to those for banks were imposed on the major national term-lending institutions. But the clean-up of their portfolios also depends on changes in the practice of keeping “sick industries” alive. The State-level DFIs remain a serious problem. Finally, as a result of soft accounting procedures combined with signals from the government that existing promoters should be left undisturbed, DFIs have not performed the corporate governance role that might be expected of them as major shareholders. In this regard, there has been no change since 1991.

Insurance

The insurance industry in India consists of two nationalized monoliths, the Life Insurance Corporation of India and the General Insurance Corporation of India, which are both pure monopolies in their respective segments. A government committee has reported on insurance reform (see Government of India 1994). Its recommendations, while not in our opinion going far enough, were sensible. It suggested opening up the sector to domestic and foreign competition, diluting the government’s holding to 50 percent of equity, reducing mandated investments in government securities by insurance companies from 75 to 50 percent of their portfolio, and setting up a regulatory agency. With the exception of some moves toward setting up a regulatory agency, nothing has been done, probably because of the threat of trade union unrest.
Liberalization of Portfolio Capital Flows

The Indian government’s attitude to capital account liberalization has been cautious.23 Outflows by residents are still forbidden or heavily controlled. India has always been fairly liberal as regards repatriation of capital and dividends by nonresidents but in the past there were stringent restrictions on nonresident inflows. The latter have now been substantially deregulated so long as they come through recognized foreign institutional investors consisting mainly of broad-based funds such as investment trusts and pension funds. Offshore borrowing by Indian companies is controlled by the Ministry of Finance. There are also strict controls on the foreign asset and liability positions of domestic banks. We think that this cautious stance is justified in view of the problems that can arise due to the volatility of capital flows. Experience in reforming countries suggests that excessive capital inflows can cause real exchange rate appreciation and harm export growth, and lead to maturity mismatches and deterioration in the quality of bank portfolios. Acute difficulties can result if the funds are pulled out, something that can happen not only due to domestic mismanagement but also for exogenous reasons. We thus agree with those who believe that full capital account liberalization should come later in the reform process after trade liberalization, financial regulation, and fiscal consolidation are well advanced.

Fiscal and Trade Policy Reform

Throughout much of the developing world since the mid-1980s there has been an important policy reversal in favor of eliminating most trade controls. India has shared in this movement though to a lesser degree than many other Asian countries. Once controls are eliminated, trade is influenced only by tariffs and subsidies. Tariffs are used both to raise revenue and to protect certain domestic activities. Mainstream economic theory suggests that any such protection should normally be by domestic subsidy. However, the Indian tariff, though reduced, remains highly protective.

Reform of Trade Controls

Prior to 1991, most imports were licensed or prohibited. Licenses were generally granted only on proof that there was no source of indigenous supply, and they were granted only for own use, i.e., not to commodity traders. All “bulk” items (e.g., cereals, petroleum, ores, metals, fertilizers) were “canalised”, that is they could be imported only by a government monopoly. Controls rather than tariffs limited

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23 We confine ourselves to portfolio investment here. Direct investment is discussed below.
imports. The balance of payments crisis of 1991 necessitated a temporary increase in
the stringency of these controls. But at the same time the intention of moving from a
regime of quantitative restrictions to a price-based mechanism was announced. So far
as the import of producers’ goods is concerned, this has been largely achieved,
though most petroleum products and fertilizers remain canalised. But a virtual ban on
consumer good imports has remained with only a few recent concessions. (About
75 percent of value added in manufactured consumer goods is still subject to quanti-
tative controls.) This exception to liberalization defies all economic logic, and stems
from the Swadeshi movement under which the embargo or destruction of foreign
goods was an expression of nationalistic fervor. The other main exception is that a
good many restrictions remain on exports of agricultural and livestock products, and
ores and minerals.24 In a few cases the reason is to prevent sensitive food price rises.
But the main reason has been to keep indigenous raw material prices low, and to
protect some domestic industries. Cotton is one of the most important examples, to
protect handloom weaving.

While some exports are restricted, others are promoted. There is a panoply of
complicated export promotion schemes. These were intended to mimic Republic of
Korea and Taipei, China’s trading regimes that created virtual free trade for exporters
while maintaining a protected home market. They are probably essential, but only
until such time as India has (if ever) very low protection and a domestic fiscal system
under which exports are exempt from all domestic indirect taxes.

Reform of Tariffs: Protection and Revenue Aspects

In 1990-1991 the unweighted average nominal tariff was 125 percent with a
peak rate of 355 percent. There were a great many different rates and dozens of ex-
ceptions, resulting from years of lobbying. By 1995/96 the peak rate was further re-
duced to 50 percent, probably bringing the average to 40 percent, close to the
recommendations of the Tax Reforms Committee (Government of India 1992). The
big devaluations of 1991 meant that Indian industry could weather both liberalization
and these duty reductions without too much pain. The July 1996 budget made some
further reductions in customs duties, especially on inputs for the textile and elec-
tronics industries, probably increasing their effective protection. However there was
a general increase of two percentage points in all duties, probably resulting in a small
rise in the average rate.

The Tax Reform Committee recommended a structure of seven rates, rising
roughly with the degree of processing, though consumer goods would pay the highest
rates of 30-50 percent regardless of the degree of processing. This structure (which
would leave India as one of the most protected of all countries) bears no relation to

24 Quantitative restrictions still apply to four fifths of valued added in agriculture.
any of the static or dynamic arguments for protection. Indeed, the infant industry argument was advanced for yet additional protection.

Our own views are that India should opt for a low uniform protective tariff of about 10 percent (plus countervailing duties for domestic excise and sales taxes). But the strong political economy arguments for uniformity were brushed aside, although important simplifications have been made. The Committee argued in the manner of an old-fashioned tariff commission, whereby comparatively disadvantaged industries get most protection. This may have been necessary for an interim period of adjustment, but not for the long run. The United Front government eventually established a Tariff Commission to consider tariffs product by product—a most regressive idea.

It is not clear whether it has been the political need to reduce protection slowly, or whether it was the loss of revenue that governed the speed of reform. The Budget speeches have reflected both concerns. But the ban on consumer goods imports, a rise in which would have increased the revenue, suggests that protectionism may have outweighed the fiscal argument. Customs revenue stood at 3.9 percent of GDP in 1990/91, and 3.3 percent in 1995/96 (revised budget estimates). This small fall in the face of large reductions in tariff rates is explained by rapid import growth in the previous two years and the elimination of many exemptions. It could be easily offset by other desirable tax changes, for instance a rise in direct taxation. In the long run a low uniform tariff would imply a much lower revenue from protective duties. But “countervailing” duties—the counterpart of domestic indirect taxes—which are not protective, could raise the total taxes collected on imports close to the 3.9 percent of 1990/91.

**Domestic Tax Reform**

An efficient national system of taxation must involve reform at both the central (federal) level and that of the states. Such a reform requires agreement of the states, and this is complicated by the revenue sharing of the different taxes.

The taxation powers of the Center and the States are laid down in the Constitution. Broadly speaking, the taxes assigned to the States are land tax, agricultural income tax, alcohol excise, and sales taxes. The rest belong to the Center, and consist of customs and central excise, and personal and corporation income tax. The Center retains all customs and corporation tax revenue, but must share central excises and personal income tax with the States in proportions decided by quinquennial Finance Commissions. Currently the rates are 47½ percent of central excise, and 77½ percent of personal income tax. It is not surprising in view of these perverse incentives that

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25 For further discussion of India’s trade restrictions and tariff protection see Joshi and Little (1996).
26 The rationale of our views is fully discussed in Joshi and Little (1996, ch.3).
customs revenue as a proportion of GDP more than trebled in the 20 years before 1990/91, while personal income tax stagnated. The latest Finance Commission has sought to end this absurdity, proposing that the States get a percentage, to be revised only after 15 years, of the pooled total of all central taxes. But this highly desirable change would require a constitutional amendment, and it has not yet been enacted. Because of increasing inefficiency, evasion, and corruption (itself perhaps a function of the Center’s lack of concern) the yield of direct taxation in India is very low, about 15 percent of total taxation. The yield in 1990/91 reached a low of 2.3 percent of GDP. The Tax Reform Committee made many suggestions for reform, and the yield has subsequently improved a little: to 3 percent of 1995/96 GDP. This was either despite, or partly because of, a reduction in peak marginal personal and corporation tax rates to 40 percent and 46 percent, respectively.

The Central excises (about 4.1 percent of GDP in 1990/91) consisted of an extremely complex maze of more than a hundred different tax rates on (mainly) industrial products, whether current inputs, capital goods, or final consumption goods. The multiplicity of rates and exemptions bore no relation to any social or economic purpose; and the extensive cascading taxation of inputs, both current and capital, constituted a serious bias against both investment and exports. Much the same applies to State sales and excise taxes (4.2 percent of GDP in 1990/91). They fall predominantly on the same base, and except in a few states are not rebated at subsequent stages of manufacture or distribution. Interstate sales are also taxed at a rate of 4 percent, so that India is not a common market.

Since 1990/91, a good deal has been done to simplify central excises. Specific rates have been changed to ad valorem, and many reduced. The number of rates have also been greatly reduced (to ten). A limited form of VAT introduced in the late 1980s, called MODVAT, under which some but not all excise taxes were rebated, has been extended. At the same time many exemptions have been eliminated. The yield has fallen only a little (to 3.8 percent of GDP).

It is now accepted policy (in New Delhi at least) that the Center and the states should work toward some form of VAT to replace both excise and sales taxes, except for the excises on alcohol, gasoline, tobacco, and possibly a few other luxury consumption goods that are prevalent in all countries. Much good work has been done by the National Institute for Public Finance and Policy (1994) on the difficult problem of devising the best system that

(i) preserves the fiscal autonomy of the States;

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27 Another reason is that the Center cannot tax agricultural income, and the States do not want to.
29 In the 1997 budget, these rates were further reduced to 30 and 35 percent, respectively.
(ii) permits some interstate redistribution;

(iii) preserves the desirable economic qualities of the VAT; and

(iv) is administratively efficient, discouraging leakages and corruption.

In most federations VAT is levied and controlled by the Center, though administration and proceeds are shared. Examples include Argentina, Austria, Germany, and Mexico. This is certainly the best option. However, all observers argue that there is no possibility of getting the States’ agreement to the constitutional changes that would be required. Though a radical solution under which the Center gives up all domestic indirect taxation might be possible in the long run, the most negotiable solution is probably a dual system under which the Center would continue with an extended and simplified MODVAT, while each State would institute its own VAT with some agreed harmonization to create a common market within India. Unfortunately little progress seems to have been made in achieving this reform.30

The Reform of Expenditure and Reduction of Subsidies

Subsidies are negative indirect taxes. The explicit central subsidies in 1990/91 were about 2 percent of GDP. Export subsidies were easily eliminated after the large devaluation. But almost no progress has been made in reducing the other two main subsidies, on fertilizers and food. They constituted about 1.3 percent of GDP in 1990/91 and 1.1 percent in 1995/96.

Fertilizer subsidies are partly subsidies to the fertilizer industry, and partly to farmers, very roughly half and half depending on the c.i.f. price. There is no sound economic argument for special protection of fertilizer plants: there is only a short-run argument that otherwise, probably half the industry would collapse. But the subsidy should certainly be reduced, and a beginning made with closing high-cost plants. There is also no good argument for subsidizing fertilizers to the farmer. This is discussed further below when we consider agricultural trade.

Food subsidies represent the difference between the procurement prices paid by the Food Corporation of India and the issue prices of the public distribution system (PDS). For 1995/96, Rs 5250 crores was budgeted—about one-half percent of GDP. The justification for food subsidies is poverty relief. However it is widely acknowledged that the PDS has proven to be a very cost-ineffective way of relieving poverty (for example see Parikh 1994, 1998). This problem is discussed below.

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30 On all this see Joshi and Little (1996, ch. 3).
The above explicit subsidies are the tip of an iceberg. In the case of public services or products that could be sold to persons or firms, one should include as subsidy the difference between cost and what is recovered. A calculation of subsidies along these lines has recently been made for the year 1994/95 (see Table 4) by Srivastava and Sen (1997), building on the pioneering paper by Mundle and Rao (1991). The calculation distinguishes between subsidies on “merit goods” (defined, rather unconventionally, by these authors as goods with significant positive externalities, e.g., primary health, primary education, R&D) and “nonmerit goods”. The subsidy on merit goods is about 4 percent of GDP, that on nonmerit goods a massive 10 percent of GDP, a figure that is comparable to the overall public sector deficit. This includes the notorious subsidies on power, irrigation water, and other agricultural inputs many of which are the responsibility of State governments. None of these subsidies accrues significantly to the poor.

Table 4: Subsidies in India

<table>
<thead>
<tr>
<th>Subsidies</th>
<th>Center</th>
<th>States</th>
<th>(% GDP) Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merit Goods</td>
<td>0.7</td>
<td>3.0</td>
<td>3.7</td>
</tr>
<tr>
<td>Nonmerit Goods</td>
<td>3.8</td>
<td>6.9</td>
<td>10.7</td>
</tr>
<tr>
<td>Social Services</td>
<td>0.3</td>
<td>2.9</td>
<td>3.2</td>
</tr>
<tr>
<td>Economic Services</td>
<td>3.5</td>
<td>4.0</td>
<td>7.5</td>
</tr>
<tr>
<td>Total</td>
<td>4.5</td>
<td>9.9</td>
<td>14.4</td>
</tr>
</tbody>
</table>


The efficiency and cost of supply of government services are also matters of concern. In general government departments are grossly overstaffed, and pay rates are relatively high, and have grown excessively. From 1974/75 to 1989/90 pay per government employee rose by 5.4 percent per annum while per capita income rose by 2.5 percent per annum. Even if direct retrenchment is ruled out, pay restraint and a freeze on new employment are essential.

Agricultural Trade and Incentives

The fertilizer subsidy is only a small part of the total massive subsidization of agricultural inputs, much of which is the responsibility of State governments. The farmer pays only a small fraction of the cost of the water and electricity that he uses. These subsidies, although politically influenced to a high degree, are an essential part
of the agricultural economy. The prices of all major agricultural products are determined by the central government’s control of trade. The price of cereals and cotton has been held below world prices in most years. Farmers pay more than world prices for machinery and pesticides. Although sugar and edible oils are protected, agriculture on balance has been heavily disprotected. The input subsidies offset this partially.

If the input subsidies, which are not only a fiscal strain but also cause production inefficiencies such as an excessive use of water, and nitrogen relative to phosphates, are to be eliminated, agriculture clearly must be compensated. Free trade would more than compensate, though there would be problems of adjustment, suggesting it should not come overnight.

The rise in the price of food consequent on free trade in farm products would imply that antipoverty programs should be strengthened. This is discussed below. Even if the whole of the fiscal savings from eliminating subsidies was spent on such programs the economic and social gains would be great. First, these programs would be far better from a distributional point than input subsidies. Second, agricultural incentives would be changed in such a way as to greatly improve the efficiency of production and the value of output. Cereals and cotton production would be favored relative to the overprotected oilseeds and sugar.

The reform of agricultural trade policy and pricing is as important as that of industrial policy and pricing, and financial reforms. But it has attracted little attention. Much less has been done, and there is no accepted framework of reform. Although there has been some derestriction, for example, exports of rice, trade remains highly controlled. To some extent this is because agriculture is a State subject. Nevertheless the broad lines of agricultural policy are determined by the Center’s control of agricultural trade, and by its fertilizer policy.

**Industrial Policy Reform**

The strategy of Indian industrialization did not change much from Independence to 1990. As described earlier in the first section, it emphasized heavy industry, public ownership, and import substitution. This went along with contempt for the price mechanism, and a belief that competition was harmful. The result was an almost incredible maze of controls. Big private business, both domestic and foreign, was feared and distrusted. Special obstacles were put in the way of expansion by “dominant” companies, and those with significant foreign ownership. Yet at the same time the political support of private industry was needed. So businesses were...

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31 In the 1970s, the ratio of nominal protection in agriculture to that in manufacturing was 0.4; in the 1980s, it was around 0.6. This calculation comes from Pursell and Gulati (1995). The same source estimates the ratio of effective protection in agriculture to that in manufacturing as 0.64 in 1986/87.
protected in many ways from both foreign and domestic competition. Their incumbent workers, like those in the public sector, were doubly protected as it was made illegal to sack anyone without permission, or even to vary the kind of work.

**Deregulation**

Most controls over production and investment by domestic enterprises are now gone, and private enterprises can in principle compete in nearly all industrial sectors. Foreign direct investment has been made much more welcome, though it is still restricted and controlled. This all adds up to an important change of regime and outlook. Foreign ownership up to 51 percent is now “automatically” approved for a wide range of industries deemed to be of national importance. Proposals up to 100 percent are considered by a Foreign Investment Promotion Board. There has been some response. Direct foreign investment rose from $150 million in 1991/92 to $2 billion in 1996/97, still small compared to People’s Republic of China, Indonesia, or Thailand. Most observers agree that the combination of increased competition and reduction of controls is making Indian industry more efficient and more enterprising, though there is as yet no hard evidence. But there is still a great deal that is wrong. It stems largely from the continued importance of public industry, especially its dominance of the nontradable goods or infrastructural sectors.

**The Public Sector and Privatization**

There has been a wave of privatization in the world, largely resulting from the fiscal burden imposed by loss-making public industries. In India, the central nondepartmental public enterprises produce mainly tradable goods, and are important or dominant in heavy industry: basic metals, heavy machinery, oil, and fertilizers. Except in the oil industry, returns are very low, and over 100 enterprises were actually making losses in 1992/93. Half of these had been referred to the Board for Industrial and Financial Reconstruction by end-1994 (see below). The situation is likely to get worse, now that imports have been liberalized and private competition is permitted. It is very unlikely that their efficiency can be greatly improved without privatization, which, however, is not on the political agenda. Yet these industries are not natural monopolies, and freedom to import can ensure competition.

Infrastructural services are dominated by central departmental enterprises (telecommunications and the railways) or by State enterprises (power, water, and other transport). The problem here is not merely losses, but inadequate services. Infrastructure is in poor shape. Rail freight services are inadequate, and many main roads

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32 For a more extended treatment see Joshi and Little (1996, chapter 5, especially section 5.2.1); and Ahluwalia (1998).
are highly congested. Ports are also congested, and delays endemic. Telephones are scarce, and connections erratic. Parts of the irrigation system are falling into disrepair. However, power shortages are probably the most threatening for economic growth. The state electricity boards (SEBs) are notoriously inefficient and corrupt, and cannot be relied on to pay their bills. This makes investment in new generating capacity difficult. However, one State (Orissa) has taken the plunge into privatization cum regulation. It is hoped that others would follow suit. One way or another, drastic reform of the SEBs is essential.

Infrastructural deficiency results from a long history of undercharging and underinvestment. The undercharging comes from political control of pricing, and the fact that politicians at both the Center and in the States are unable to resist the short-term popularity of subsidizing rail and bus travel, and giving farmers subsidized, even free, electricity and irrigation water. The underinvestment stems from the waste of public revenue on subsidies, and on investments in manufacturing projects with very low returns.

The massive investment now needed far exceeds public sector financial resources. The urgent need to infuse private investment, both domestic and foreign, into infrastructural projects on a large scale is accepted in principle. In practice the modalities for doing so, thus permitting competition with the public sector, do not seem to have been fully researched, let alone settled. The same is true of the problem of regulating natural monopolies where adequate competition cannot be ensured. It took over three years of negotiation to agree on the first major foreign investment in electricity (the Dabhol project in Maharashtra).

The Legal Framework for the Private Industrial Sector

Privatization and introduction of private competition into infrastructural services should be the most burning issues in industrial policy. But there are also a good many legal impediments to the efficient private use of productive resources. Indian businessmen have long been harassed by restrictive regulations, but also protected from competition. These features have been reduced, but not eliminated. Company Law, Labor Laws, and Urban Land Law have combined to create the Indian phenomenon of “sick” industries—firms that are bankrupt but cannot be closed down. Creditors cannot sell the assets and labor is unpaid. The waste of assets that should be redeployed is considerable. These laws were enacted with good intentions but without understanding of economics. Civil servants and legislators seldom understand, or refuse to recognize, that protection of incumbent workers in larger firms reduces their demand for labor, and thus by exclusion harms the poor outsiders; nor that company laws protecting incumbent management often preserve an inefficient

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33 See also Joshi and Little (1996, chapter 5, especially sections 5.3 and 5.4); and Goswami (1996).
use of assets. As long ago as 1985 the Board for Industrial and Financial Reconstruction was set up under the Sick Industries Companies Act to deal with “sickness” in both the public and private sectors. But its own bias in favor of reconstruction, together with excessive legal delays and impediments, have meant that it falls very far short of resolving the problem.

Another interference with the free working and efficiency of manufacturing industry is the reservation of many products for exclusive production by small firms. This, together with excessive fiscal favors, distorts the natural growth of firms, and impedes technical progress and exports. No doubt this legislation was intended to promote employment. But research has shown that small firms are not reliably labor-intensive nor efficient. However, the small enterprise lobby is strong, and nothing has been done.

A thorough revision of all the legislation that affects the ownership and use of industrial assets is needed. Labor legislation that favors only a tiny minority of the workforce must be received with discretion. The scope for appeal to the law also needs to be reduced. The courts are overburdened, and delays too long, for justice to be dispensed. More generally, some critics have maintained that the once proud Indian legal system has degenerated to the point that it can no longer fulfill its essential commercial role of impartially administering property laws and enforcing contracts.

The Social Sectors: Poverty and Reform

Expenditures on health, education, and welfare can be considered to be quite largely, but not wholly, poverty-related. Rural development expenditures include mainly rural employment schemes which, in intention at least, are primarily intended to relieve poverty.

India lags behind many other poor countries in educational standards, and health and health improvement (see Drèze and Sen 1995). Expenditure was inadequate and the programs have also been much criticized for relative neglect of primary education and primary health care. We agree with the criticisms but will not go into the details of policy in these sectors, for reasons of both space and knowledge. We concentrate rather on what may be used to soften some of the possibly adverse effects of structural adjustment on the poor.

The crisis of 1990/91 resulted in a reduction in central social sector and rural development (SSRD) expenditure for two years. There was probably some increase in rural poverty in this period. The reforms were much criticized at the time as causing poverty. This criticism was essentially a confusion—deliberate no doubt on the part of conservative antireformers—in the reduction of expenditure needed to restore

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34 See Little, Mazumdar, and Page (1987, chapters 7 and 16); and Goldar (1988).
external viability with the long-term program of structural reform. Since 1992/93 there has been a remarkable rise in SSRD expenditures. The provision in the budget of 1995/96 was 63 percent greater than expenditure in 1992/93, a period in which inflation was about 30 percent. The profile of the programs has also been slanted much more toward poverty relief, both immediately and in the longer run. For instance, budgeted primary education expenditure has risen by 129 percent and expenditure on rural development by 148 percent. Estimates of the extent of poverty are contentious. Under the Narasimha Rao Government, the Planning Commission estimated a very sharp drop between 1987/88 and 1993/94 in the percentage of people below the poverty line, from 30 percent to 19 percent. Under the United Front Government, the Planning Commission has estimated no change, about 39 percent in both years.\(^{35}\) 1993/94 is the latest year for which estimates can be based on a full National Sample Survey. But a comparison of 1987/88 and 1993/94 tells one nothing about the relationship of poverty after 1991/92, the first year of reform. However it seems clear that there was a rise in poverty in 1992/93 as a result of the stabilization measures, and that this had been reversed by 1993/94 (Joshi and Little 1996, ch. 6; and Tendulkar 1998). This was still too early for structural reforms to have had any measurable effect.

One can expect the liberal reforms to reduce poverty as compared with the old policy regime. Growth should be faster. The demand for labor will rise not only because of this, but also because the pattern of output growth should be more labor-demanding. Freer trade certainly works in this direction, both for industry and agriculture. The reduction in interest rate subsidization, and in public sector investment in tradeables, will also help. However, there are two potential by-products of reform that may offset the favorable effects, if no compensating action is taken. The first is that increasing industrial efficiency, especially in the public sector, may require widespread redundancy before the favorable effects on employment take effect. The second is that freedom of agricultural trade, and elimination of agricultural input subsidies, implies a rise in food prices that would hurt poor consumers, and also subsistence farmers.

The industrial employees who would be made redundant are not poor. Also, most of them would quite quickly find new employment, as the demand for labor grows. However, redundancy would nevertheless result in hardship for some, if not well compensated. But since the potentially redundant are being paid full wages to produce little or nothing, the public sector can make both generous redundancy payments and save money. The problem of redundancy was recognized with the establishment in 1992 of the National Renewal Fund supported by IDA contributions. It has been used mainly for public sector voluntary retirement schemes, in particular for

\(^{35}\) Independent researchers have estimated a drop in the headcount index of poverty from 38 percent in 1987/88 to 35 percent in 1993/94.
75,000 workers who have been retired in the textile sector. But it is too small to cope
with the full extent of the problem, and the fear of creating redundancy was a factor
inhibiting public sector and other reforms from 1990/91 to 1995/96. There are
probably 2 million redundant workers in the public sector alone. Even if one allows a
10-year horizon, the release of redundant labor needs to be accelerated.

A rise in farm input and output prices is a rather more difficult problem. The
knee-jerk reaction would be to increase the food subsidies via the Food Corporation
of India and the Public Distribution System (PDS). But it has been convincingly
shown that the PDS is a grossly inefficient instrument for reaching the poor (see
Parikh 1994, 1998). Various suggestions have been made to improve the poverty
targeting of the food subsidies, e.g., by limiting them to cereals, and denying ration
cards to those with overt signs of wealth. More radical would be the replacement of
the PDS by a system of food stamps. This would be a more economical and flexible
way of subsidizing food consumption, but the targeting problem would remain.

Public Employment Schemes can almost certainly be more effective instru-
ments of poverty relief than food subsidies. The two main central public Employment
Schemes are the Jawahar Rozgar Yojana (JRY) and the employment-assurance
Scheme (EAS). These schemes are modelled on the Maharashtra Employment Guar-
antee Scheme, which was highly successful in preventing destitution and death dur-
ing the drought years of the early 1970s. The needy targeted themselves because
wages were very low, and the drought meant that there was almost no alternative
employment (for a general assessment, see Drèze 1990b). Later it became much less
well targeted, and probably ceased to be a genuine guarantor of employment, because
the official minimum wage was raised and it was illegal to pay less (see Ravallion,
Dutt, and Chaudhri 1993). Its most important clone, the JRY, is also rather poorly
targeted on poverty, only about half of those finding employment falling below the
poverty line (see Neelakantan 1994). Other leakages result in only a small percentage
of the expenditure reaching the poor (see Guhan 1995). Hence, these schemes, in

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36 The basic structure of the PDS is as follows. The Food Corporation of India buys specified commodities
(mainly foodgrains) at “procurement prices” and then supplies them at “issue prices” that are lower than open market
retail prices through “fair price shops”. The setting of procurement and issue prices is a complex exercise. On one
hand, if procurement prices are too far below market prices, the government cannot procure. If procurement prices are
too low and also act as support prices, the incentive for farmers to grow foodgrains is adversely affected. On the other
hand, if procurement prices are too high, issue prices have to be raised, which goes against the objective of protecting
the poor. If issue prices are not raised, the budgetary burden goes up. Note also that the difference between procure-
ment and issue prices is not a straight subsidy to consumers because the operations of the Food Corporation of India
involve enormous wastage and corruption.

37 An earlier study using a general equilibrium model was Parikh and Srinivasan (1993).

38 Food stamps are essentially a second currency doled out to the needy that can only be spent on certain food
items. The licensed food retailer is reimbursed in cash by the issuing agency. One could not fully ensure that the re-
tailers sold only food in exchange for stamps: but neither this leakage nor the fact that the stamps could be sold for
cash would matter. The recipient of the stamps still gains. Food stamps can do everything the PDS can do, and do it
more flexibly and cheaply. There would be no need for public distribution and government shops. Government buffer
stocks could still be operated, if desired, with purchases and sales being made through normal commercial channels.
The problem of targeting would however remain. Food stamps are commended in Bhagwati and Srinivasan (1993).
times and places of normal rainfall, cannot be advocated for poverty relief alone, especially if the going agricultural wage or more has to be paid. The works created must be valuable, and there is some doubt about how valuable they are. More research, improved design and implementation, and careful monitoring is needed.

Direct transfers for the disabled, for the old and for widows; and allowances for sickness and maternity benefit are likely to be better targeted to poverty than existing public employment schemes (but are not competitive with them). Tamil Nadu has used such transfers since 1989/90. The 1995/96 budget assumed for the Center for the first time a role in helping the States with direct transfers, by instituting the National Social Assistance Scheme. These transfers, unlike public employment schemes, should not be regarded as interim measures whose need will hopefully vanish with the success of labor-demanding growth policies, but as permanent features of a good society.

**Prospects for Growth and Reform**

The rate of growth of India’s national income will depend very much on a continuation of the reform process of 1991-1996, toward an open, liberal, and stable economy in which the incentive structure directs individual action toward the general welfare. If the reforms made so far go no further, or are even in some respects reversed, then the growth rate of 5-6 percent per annum achieved in most years since the early 1980s may sink back to the average of 3-4 percent per annum that prevailed earlier.

The bearish facts that could have this result are:

(i) The growth rate since 1980 has been supported by unsustainable borrowing. The central government can no longer safely enjoy a primary deficit.

(ii) The very small improvement in the fiscal deficit since 1990-91 has been achieved by a fall in public investment.

(iii) The material infrastructure is under greater strain than ever before, and without major economies in current expenditure, public investment in the infrastructure will continue to be inadequate.

(iv) Excessive public borrowing results in very high interest rates, discouraging private investment.

(v) The economy has been enjoying an exceptional run of good monsoons.
The above makes it clear that the maintenance of 5-6 percent growth requires a very substantial reduction in public sector deficits, both at the Center and in the States. This must not be achieved by cutting investment, but mainly by reducing implicit and explicit subsidies. The State Electricity Boards must be radically reformed (or abolished), and the problems associated with private, including foreign, investment in power, transport, and telecommunications must be solved.

We believe that the more exciting prospect of growth in the region of 8 percent per annum requires the rapid fulfillment of most of the other reforms that we have discussed. This is necessary for an improvement in the use of existing resources to continue, and to ensure that new investment has a high social yield. Further strengthening of financial institutions is a high priority. The banks are still inefficient, and weighed down by nonperforming assets. The cost of intermediation is high by international standards, discouraging private investment. A further large reduction in protection over the next few years is needed to ensure a high social return to investment, both domestic and foreign. It is impossible to assign priorities to the other reforms; all are needed to increase the efficient working of the economy.

We have argued that the prospect for growth depends on reform. What are the prospects for reform? It is now clear that the 50 years of almost unbroken Congress government is likely to be succeeded by evanescent coalitions including a large number of small parties with limited regional, and communal or caste, support. This might in theory be consistent with stable rather liberal and open economic policies. This, however, is too optimistic. India still lacks the strong consensus in favor of relative laissez-faire and the open economic policy that is required for such a scenario. Certainly in the past 10-15 years a consensus has formed among policymaking elites that the highly restrictive permit-raj economic regime must be reformed. But a consensus is still far off at both the Central and State levels, favoring the very liberal policies we espouse and believe to be essential for achieving growth rates of over 6 percent per annum. Moreover, despite the consensus in favor of some unravelling of red tape, the reforms of 1991-1996 would not have been achieved without the leadership of a small, dedicated body centered on the Finance Ministry. We fear that the force of this leadership may now decline.

**Increasing the Power of the States**

One reform that will surely be pressed forward is a devolution of powers and responsibilities to the States. The growth in the strength of political parties with a following in only one or two States will ensure this.

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39 Italy and (until recently) Thailand are, perhaps, examples of unstable polities and stable economic policies, combined with good economic performance.
Some believe that such a devolution and decentralization of powers is a reason for optimism. It has been suggested that State governments may now show greater stability than the Center, and also that some may be more reform-minded than the Center. We have little faith in such arguments. In the past, State governments have generally been unstable, the long term Communist government of West Bengal being an exception (its economic performance was also exceptionally bad). A few have admittedly shown themselves more willing to privatize than the Center, and have even welcomed Coca Cola. But this does not add up to any convincing movement.

One should in any case ask what the States can do, independently of the Center, which would promote higher growth for themselves and for India as a whole. In any federation the Center or Federal Government must hold the main keys that govern the influence of policy on the economic growth of the nation. Apart from defense, it must be responsible for macroeconomic stability; this in turn entails regulation and control of banking and the monetary system, and the borrowing of State and municipal governments. It must also be responsible for the international trade regime, and for all matters affecting members of different states including interstate trade and justice. Economies of scale and externalities also make large parts of the economic infrastructure a natural central preserve, for example, railways, trunk roads, and telecommunications. Finally, the Center has a comparative advantage in raising most taxes, either because the tax base is mobile or because of economies of scale.

How then may the States help given a relative increase in the devolution of powers and responsibilities? The general economic argument for devolution is that subnational governments are closer to the people whose wants and needs vary from region to region. It is supposed that they will therefore more efficiently deploy public resources in accordance with local tastes. This is an a priori argument that may not be realized in practice, since State or local governments may be more corrupt, nepotistic, and inefficient than the Center.

The above argument for devolution concerns only expenditure. The comparative advantages of the Center in raising revenue are such that there is always a fiscal imbalance in federations. The States depend on the Center for much of their revenue (in India it is about 40 percent). This means that full fiscal independence, and the advantages in terms of discipline and responsibility that go with it, is undesirable if not impossible. There would be grave difficulties in the way of increasing the States’ own tax revenue. Sales taxes, which account for about 60 percent of their own revenue, are already a serious source of economic inefficiency. Nevertheless, there could be some benefit from increasing both the responsibilities of the States and the revenue they derive from the Center, provided that the latter accrues on an “objective” basis, i.e., a basis that does not depend on the States’ own expenditure. In the

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[40] We have briefly discussed above the problems associated with introducing States’ VATs. See also Joshi and Little (1996, section 3.11) and references given there.
past the awards of the Finance Commissions have been too much concerned with filling the States’ budgetary gaps. A major reform of the manner in which the central revenues are shared with the States is in any case highly desirable (see above), and is essential if the responsibilities of the States are to be increased.

The Center must certainly continue to regulate the borrowing of the States, both domestic and foreign. In a good many countries, excessive borrowing by subnational governments or other institutions (often to finance current expenditure) has been a major cause of national crisis. The national or Federal government cannot credibly maintain that it will never bail out bankrupt states (or major banks). It is therefore compelled to regulate in the national interest.

Further devolution of responsibilities to the States, together with a clearer demarcation of some of these responsibilities as between the Center and the States, is a politically essential reform that could also be beneficial from a welfare and efficiency point of view. The latter must depend on how well the devolution is done, and is any case far from certain. Success requires agreement on quite radical fiscal reforms on the part of the Center and the States. Finally, one must remember that the States have been responsible for the worst populist measures of heavily subsidized rice and bus fares; and free electricity and irrigation water for farmers.

The greater freedom for private investment, both domestic and foreign, already in place implies greater freedom for the States to compete for this investment. Obviously their own budgets must limit the attractions they can offer in terms of facilities or reduced taxation (this increases the importance of hard budgeting by the Center). Nevertheless this competition could help to increase private investment. And some of the most progressive states may be able to go ahead still faster.

One can conclude only by saying that the effects of increased devolution on the welfare of the country and the prospective rate of growth are highly speculative. Devolution thus cannot itself be counted as one of the reforms we regard as essential for raising the rate of growth of the Indian economy.

**Conclusion**

India grew fairly steadily at about 3.6 percent per annum for 30 years after Independence until 1980. As the rate of population growth was about 2.3 percent, the growth per capita was a disappointing 1.3 percent per annum. During this long period the rate of saving doubled. Therefore the growth productivity of savings halved. This was partly due to a relative rise in the price of capital goods. But there was also a large fall in the productivity of investment, which in real terms rose by about 50 percent as a percentage of GDP.

In the 1980s the growth of GDP rose to about 5½ percent per annum, while savings and investment remained on a plateau of about 22 percent of GDP. What
explains this jump? One reason is that the boom was based on an unsustainable level of borrowing, resulting in a fuller use of existing resources. The other reason is a rise in the efficiency of the use of resources, especially private investment. This in turn may be attributed to the mild, liberal reforms that began in the late 1970s.

In the 1990s the higher rate of growth was restored after a sharp drop in the crisis year of 1991/92. Savings and fixed capital formation remained on the previous plateau. During 1996/97 signs of industrial recession were becoming apparent probably due to the high real interest rates arising from monetary attempts to contain inflation in the face of the government deficit. 1997/98 is likely to show a reduced rate of growth.

The big question is whether a growth rate of 6 percent can be sustained, let alone increased to 8 percent or more as some optimists predict. We have given a number of reasons why a fall back to the Hindu rate of growth is not difficult to imagine. To prevent this, domestic investment in the infrastructure, much of it public, must be increased at the same time as the public deficit is reduced, so that private investment in agriculture and manufacturing has both the room and the incentive to expand. This at least is necessary to sustain the present rate of growth of about 6 percent per annum.

Still higher rates of growth depend on continuing liberal reforms that will encourage investment in labor-intensive activities, resulting in a more effective use of India’s labor force. While these include, of course, both agriculture and services, the export of labor-intensive manufactures remains the most promising way ahead. It was the high road for Hong Kong, China; Republic of Korea; Singapore; and Taipei, China for at least the first 15 years of their astonishing growth. It will not be so easy for India, which now has People’s Republic of China to compete with. Meanwhile, the industrialized countries of the West may react unfavorably to labor-intensive imports now that they themselves have a problem in employing unskilled labor. Against this, in the long run, India could look forward not only to markets in the Far East, but also to large foreign direct investments from these increasingly high-labor-cost countries, provided that exports are not regulated or taxed, and employment conditions are not discouraging.

We see no other deus ex machina that might result in very high growth rates, or an acceleration of income per capita. The plateau of savings and investment is already high for a very poor country, and higher rates such as prevailing in the “miracle” countries are likely to come only as a result, and not as a cause, of very rapid growth.

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41 Joshi and Little (1994, 327-8) provide a fuller discussion of the reasons for the rise in growth rate.
A demographic miracle is also unlikely. India has not reached the standard of living and education at which a rapid fall in the birth rate is predictable.42

Since we do not believe that the political conditions are favorable for rapid liberal reform, we would not predict growth rates of 7 percent or more. We think that 5-6 percent will continue, provided that the fiscal and infrastructural problems are surmounted. But a relapse toward the Hindu rate of growth has to be feared.

**Postscript**

We wrote this paper in early 1997. We see no reason to alter the judgments made. As we anticipated, growth of GDP fell to 5 percent in 1997/98 with the growth of industrial production down to 4.2 percent. Three factors were responsible: (i) high real interest rates caused by tight money policies undertaken for anti-inflationary reasons; (ii) increasing infrastructural bottlenecks; and (iii) very disappointing export growth (2.6 percent) for a second year in a row. These factors are a warning of major underlying problems and confirm our view that the potential growth rate of the economy does not as yet exceed 6 percent.

We maintain our judgment that sustained growth of over 7 percent requires the rapid fulfillment of the radical reforms outlined in this paper. We can illustrate this with reference to export promotion, which is clearly of central importance in achieving rapid, labor-intensive growth. The limited reforms since 1991 undoubtedly contributed to the healthy growth of 20 percent per annum in the dollar value of exports from 1993/94 to 1995/96. But the sharp slowdown in export growth to only 3 percent since then also indicates the shallowness of the improvement. There is still no sign of an East Asian or Chinese style export boom in labor-intensive goods that would accelerate poverty reduction.43 To this end, deeper reforms are necessary along with the maintenance of a competitive exchange rate. Firstly, the process of trade liberalization must be carried further. This includes elimination of import controls on consumer goods and reduction in tariffs to a low uniform level. Secondly, agricultural trade must be freed. India could then become a substantial exporter in many agricultural commodities (see Pursell and Gulati 1995, and Gulati 1998).44 Thirdly, reservation of products for small-scale industry must be rolled back. Exports of mass consumer goods such as shoes and garments may require production in factories employing large numbers of people. Often the technique of production is the same in a

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42 There are some signs that India’s population growth is slowing. Even if this is confirmed, it remains true that the labor force will continue to grow rapidly in the next two decades. The implied increase in the ratio of working-age adults to children will have a favorable effect on the growth of incomes but only if the adults find productive employment.

43 A penetrating analysis of India’s export performance is given by Srinivasan (1998).

44 The poorest consumers would have to be protected from the consequential rise in the price of staples. This issue is discussed above.
small as in a large firm but the large firm saves capital by lower building costs and smaller inventories per unit of output. There are many examples of this in People’s Republic of China and East Asia generally. Fourthly, direct foreign investment must be encouraged in labor-intensive goods.\textsuperscript{45} India does not currently provide a welcome environment for foreign investment in these sectors, partly because many of these are reserved for small-scale industry. Finally, infrastructural constraints must be broken if India is to compete in world markets.\textsuperscript{46} Thus, sustained export growth requires reforms across a broad front. The same goes for other reforms; the strong interdependencies between them imply that success depends on pursuing them as a package.\textsuperscript{47}

We were rather pessimistic about the future of reform, because it was likely that India’s political future would consist of a series of unstable coalitions. The United Front minority coalition government, which was in power for only a few months, has been replaced by an equally fragile Bharatiya Janata Party (BJP) minority coalition government. The BJP government has also declared itself in favor of reform, but in terms that betray the nationalist and protectionist sentiments that are known to be strong within the party. The first full budget of the new government embodies a marked return to protectionism, which invites and often succumbs to the demands of every producer of every item in the tariff nomenclature. There are promises in the matter of public enterprise and industrial and labor market reform; and the urgent need for infrastructural reform and investment is recognized. It will be heartening when and if serious progress can be reported. The same goes for the fiscal deficit that increased in 1997/98 and which the government promises to reduce. In fact, the deep fiscal reform that is required to reduce subsidies while simultaneously increasing government expenditure on infrastructure and the social sectors is nowhere in sight.

The 1997 Asian financial crisis adds to India’s difficulties. While the current account deficit (1.5 percent of GDP) is moderate; reserves are comfortable (around $25 billion); and external debt is low (20 percent of GDP) and very little of it is short-term, the crisis will be very bad for exports in 1998/99. Although India exports relatively little to East Asia (about 15 percent of total exports), she will face strongly increased competition in third markets.

The BJP government also appears to be taking India down the road of nuclear weapons development. Whatever the political rights and wrongs of this move, its economic consequences promise to be adverse. As of now, it is not possible to estimate the rise in the defense budget, the direct effect of international sanctions on aid

\textsuperscript{45} Multinationals have played a significant part in the export growth of People’s Republic of China, Malaysia, and Thailand. This investment, much of it Asian, has been mainly in labor-intensive goods, sometimes as part of a vertical intra-industry chain. It has transferred technology (mainly low-tech) but also importantly, management and marketing skills.

\textsuperscript{46} Port capacity is just one example among many. The turnaround time for ships in the Bombay and Calcutta ports is 5-6 days in contrast to only a few hours in ports in Southeast Asia.

\textsuperscript{47} The only exception is capital account liberalization, which should come later in the reform process. In this respect, India has shown appropriate caution.
and loans, and the indirect effect on foreign and domestic investment of the resulting uncertainty in the economic climate. But early signs are not encouraging. The government could perhaps have neutralized the effect on investment by a radical proreform budget but it let the opportunity slip.

Our view of the prospects for growth have not changed since we wrote the paper. We think that 5-6 percent growth may still be achieved but our fears of a relapse to the “Hindu rate of growth” remain.

Bibliography


India — Reform on Hold  41

42  *Asian Development Review*


People’s Republic of China: Economic Performance and Prospects
Fan Gang, Dwight H. Perkins, and Lora Sabin

Abstract. The economic reforms of the People’s Republic of China (PRC) have led to a switch from negative to large positive total factor productivity growth when Chinese GDP is recalculated using market rather than state-set prices. The reforms have also led to a substantial but less than complete correction of distortions in the structure of GDP, particularly the overemphasis on the producers goods industry during the pre-reform years. The reform process itself proceeded along a dual track of developing new systems without first reforming old systems. Political resistance to reform made this approach necessary, but it also had a number of adverse effects. Markets performed well in some sectors such as agriculture and small-scale industry, but poorly in such key sectors as finance. The partial nature of reforms thus led to an economy subject to strong cyclical savings. Reform in the earlier years was accompanied by declining inequality in the rural areas, but this decline soon reversed itself, and inequality began rising markedly in the rural areas. Because urban inequality rose from the beginning of the reform, overall inequality has risen substantially, although the number of absolute poor has fallen steadily. Regional and rural-urban inequality have resulted in large migration within the PRC, posing a broadbased challenge to government reformers.

The end of the 20th century is a good time to take stock of the growth performance of the economy of the People’s Republic of China (PRC). It has been almost half a century since the Chinese Communist Party took over the government of a unified PRC, and two decades since the PRC began a radical transformation of the way in which it organized and managed its economy. The focus of this essay is on this last two decades.

The end of the 20th century also coincides with the worst economic crisis to hit East and Southeast Asia since the end of the Great Depression and World War II. Through 1998, the PRC was spared the worst consequences of this crisis, but it did
not escape altogether and may face a similar economic crisis of its own in the coming decade. An understanding of where the PRC is today is one basis for judging whether it will in fact face a crisis similar to the one that engulfed much of the region in 1997-1998.

The approach in this essay is to begin with a quantitative analysis of the PRC’s economic record. The second part of the essay reviews the reform efforts of the past two decades and spells out the major reform challenges that still lie ahead. The final part of the essay reviews who in the PRC has and has not benefited from rapid growth and structural change.

Growth and Structural Change

The PRC’s economic reforms can be analyzed with respect to whether they have been too fast or too slow, or whether they have or have not completed the transformation into a market economy. The discussion in the second part of this essay will be largely in those terms. The most important question concerning the PRC’s economic reforms, however, is whether they have improved the performance of the economy since the reform period began, and whether that performance is likely to continue into the future.

The overall performance of the PRC’s economy can best be seen in a growth accounting framework as presented in Table 1. The figures in this table are mainly derived from official sources, but they differ from those published in the PRC in important ways. Most significantly, the gross domestic product (GDP) and net material product (NMP) figures have been recalculated to eliminate the effects of relative price distortions in the prereform and early reform years. Prices in the 1950s, in particular, were administratively determined, rather than market determined, and were set at very high levels for industry and relatively low levels for agriculture. Use of earlier year prices to calculate GDP or NMP growth rates, therefore, exaggerate the growth rate because they give too high a weight to the faster growing industrial sector.1 The capital stock figures were derived by the perpetual inventory method and the employment figures are in numbers of employed unadjusted for changes in human capital.

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1Several sources point out that the PRC used 1952 “unchanged prices” to calculate the NMP growth rate for the years 1952-1957, 1957 unchanged prices to calculate the NMP growth rate for 1957-1971, 1970 unchanged prices to calculate the NMP growth rate for 1971-1981, etc. To confirm that this was the case, we checked the NMP growth rates in the 1980s with those reported for the 1950s in 1960, when only 1950s unchanged prices were available and those growth rates are essentially identical. Therefore, there is no reason to think that the Chinese statistical authorities at some later time adjusted earlier growth rate estimates to eliminate the effect of early year price distortions. See, for example, State Statistical Bureau (1983, 1960).
Table 1: Accounting for Growth

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP/NMP (growth rates)</th>
<th>Capital Stock</th>
<th>Employment</th>
<th>TFP</th>
<th>Labor Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1952-1957</td>
<td>6.2</td>
<td>4.81</td>
<td>2.78</td>
<td>2.61</td>
<td>0.6</td>
</tr>
<tr>
<td>1958-1965</td>
<td>1.52</td>
<td>5.49</td>
<td>2.37</td>
<td>-2.10</td>
<td>0.6</td>
</tr>
<tr>
<td>1966-1978</td>
<td>5.0</td>
<td>8.07</td>
<td>2.63</td>
<td>0.19</td>
<td>0.6</td>
</tr>
<tr>
<td>1979-1988</td>
<td>9.9</td>
<td>10.1</td>
<td>3.07</td>
<td>4.02</td>
<td>0.6</td>
</tr>
<tr>
<td>1989-1997</td>
<td>9.51</td>
<td>9.23</td>
<td>2.79</td>
<td>4.14</td>
<td>0.6</td>
</tr>
<tr>
<td>1992-1997</td>
<td>4.14</td>
<td>6.64</td>
<td>2.58</td>
<td>-0.06</td>
<td>0.6</td>
</tr>
<tr>
<td>1997-1998</td>
<td>9.71</td>
<td>9.64</td>
<td>2.94</td>
<td>4.09</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Constant returns to scale were assumed so that the shares or weights applied to the labor and capital stock growth rates add up to one. The further assumption that the labor and capital shares were 0.6 and 0.4 respectively is one source of potential error in the TFP estimates. If the capital share was substantially higher than 0.4, then the TFP estimates would be lower and the reverse would be the case if the capital share figures were lower. A 0.5 share for labor and capital, for example, would produce TFP estimates for 1952-1978 and 1979-1997 of -0.47 and 3.42 percent respectively. Plausible changes in these weights, however, do not materially effect the argument made in this essay. The PRC does not publish national income data in a form that would allow these income shares to be estimated directly so the decision was made to use weights similar to those estimated for other developing countries.

The NMP growth rates for 1952 through 1978 serve as a proxy for the growth rate of GDP in these years. The data used in this table were calculated from official Chinese sources. The growth rates themselves, however, are very different from those found in Chinese sources because the growth rates used here were calculated in terms of 1992 prices, rather than by following the Chinese practice of calculating 1952-1957 growth in 1952 prices, 1957-1970 in 1957 prices, and 1970-1978 growth in 1970 prices. These earlier year prices were determined by administrative fiat and often bore little relationship to what market-determined prices would have been. The 1992 prices, in contrast, were largely determined by reasonably competitive market forces. Given the data available, it was not possible to recalculate NMP for each year item by item, but it was possible to recalculate NMP sector by sector. Because the main biases that influenced the growth rate were the excessively high prices of industrial products and the downward biased agricultural products, the recalculation of NMP sector by sector in 1992 prices removes the most serious biases in the earlier year figures. To recalculate NMP in 1992 prices, the first step was to derive a sector by sector price deflator. This was done by dividing reported current price NMP sector data by the Chinese official constant price production index. This derived deflator was then used to convert the current price sector figures into 1992 prices. The sector figures were then added up to give NMP in 1992 prices.

Ideally it would have been desirable to also calculate growth rates for the earlier years beginning in the 1950s using market prices for those years rather than for the year 1992 since there were bound to be significant changes in relative scarcities over that long period. But no market prices exist for those earlier years so we decided that the 1992 market prices were more likely to reflect the relative scarcities of those earlier years than would the state administratively set prices of the 1950s.

It has been argued that the Chinese corrected for the impact of the very different price structures in the 1950s through the 1970s when they calculated NMP in "comparable prices". But there is clear evidence that the NMP growth rates for the earlier years are in the constant prices for those earlier years. The 1952-1957 NMP growth rates were calculated using 1952 "unchanged prices", the 1957 through 1971 growth rates used 1957 unchanged prices, the 1971 to 1981 NMP figures and growth rates used 1970 unchanged prices, and the 1980 growth rates are based on 1980 unchanged prices. This is explicitly stated in such sources as State Statistical Bureau, Zhongguo tongji nianjian 1990 (1990, 84); and State Statistical Bureau, Statistical Yearbook of China 1983 (1983, 580-1). In addition, we checked the NMP growth rates as reported in these later publications with the growth rates calculated for the 1950s and published at that time when there was no alternative but to use the fixed prices of either 1952 or 1957. The NMP growth rates in such earlier publications as State Statistical Bureau, Weidai shintan (1960) are essentially identical to those appearing in later publications.
The capital stock data used here were derived by the perpetual inventory method. Gross domestic capital formation in current prices was taken from official Chinese sources for 1978-1997. For 1952-1977 the rate of “accumulation” in current prices was used and these figures were multiplied by 1.34 to make them roughly equal to gross domestic capital formation (1.34 is the average ratio of GDCF to accumulation in the years for which both figures are available). The current price data for 1987-1997 are deflated by the “means of production” or producer goods price index for those years, but this index is not available for earlier years. For 1952-1986, the industry sector price deflator described in the previous paragraph is used. This latter price index is not ideal, but industrial product price changes during the years 1952 through 1977 were very modest so it is unlikely that this index introduces major error in the estimates. The depreciation rate was assumed to be similar to the rate in Taipei, China that can be derived from data reported there. That rate on average was 7 percent per year.

The employment data are from official Chinese sources without adjustment. Estimates of improvements in the quality of this labor force would be desirable, but that exercise is very data and time-intensive and is beyond the scope of what can be accomplished in this essay.

Total factor productivity is derived as a residual.

The data in Table 1 tell a clear story. Prior to the beginning of the PRC’s reforms in late 1978, economic growth was slow and what growth there was arose largely because of the relatively high rate of growth of the capital stock. The capital stock could grow faster than GDP from 1952 through 1978 because the investment rate in the PRC rose steadily throughout this period. The rate of “accumulation” (roughly equivalent to the ratio of gross domestic capital formation to GDP) rose from 21 percent in 1952 to well over 30 percent by the 1970s. Total factor productivity growth (TFP) was negative for the period taken as a whole. If the contribution of human capital resulting from the rapid expansion of education had been included, TFP would have fallen even more into the negative range. Elimination of the early years of 1952 through 1957 before the PRC began experimenting with radical approaches to economic development would further lower TFP. Very high rates of investment, therefore, partly made up for the impact of the “Great Leap Forward”, the “Cultural Revolution”, and the “Third Front” effort to move major parts of the PRC’s military related industries deep into the interior between 1958 and 1976. The PRC’s NMP growth rate over 1958-1977 was only 3.3 percent (barely over 1 percent per capita), roughly the same as that of India during the same period.

What changed after 1978? The rate of growth of the capital stock rose, but by only 2 percent a year. The rate of gross capital formation as a share of GDP actually fell during the first six years after the economic reforms began. This rate then rose steadily, peaking in 1993 at 43.3 percent of GDP before falling back to 38.2 percent in 1997. These extraordinarily high rates of investment for a poor developing country were made possible before the reform period by the taxing power of the state. After the reforms got underway, however, these high rates were largely financed out of a huge increase in personal savings. There was a debate for a time over whether this

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2 Accumulation is the term used to measure the share of NMP that is used for investment purposes. As such, like NMP, it excludes many services, but the ratio of accumulation to NMP would equal that of GDCF to GDP if the rate of capital formation in the excluded service sectors were the same as in the included material sectors. The early year accumulation rates in the PRC are probably overstated because of price distortions that overvalued capital goods.
rise in savings was voluntary or forced, but the consensus now is that this rise was based on the voluntary decisions of individual households.

As a number of recent studies suggest, high savings rates are driven to a large degree by low dependency ratios (the share of the population aged 0-14 years old plus that over 64 years old, divided by the population aged 15 through 64). The PRC’s experience, like that of much of East Asia, is consistent with this hypothesis. Vigorous family planning programs begun in the early 1970s brought the share of those under 15 years old down sharply while the share of the population over 64 years old remained low due to the high Chinese mortality rates of the first five decades of the 20th century. The dependency ratio, which was around 0.8 in 1964, had fallen to 0.62 by 1982 and to 0.52 and 0.49 in 1987 and 1996, respectively.

This dependency ratio will begin to turn upward once those born in the population explosion years of the 1950s and 1960s begin to leave the labor force, but that time is two decades in the future. Chinese demographics, therefore, are supportive of a high savings rate for the foreseeable future. Other influences could bring the PRC’s saving rate down and a high savings rate does not guarantee a high investment rate as Japan and Taipei, China have demonstrated in recent decades. That said, there is still no reason to expect the PRC to experience a decline in the rate of capital formation due to foreseeable demographic trends.

But even if the investment rate remains high, it does not follow that the PRC will continue to experience high GDP growth rates. High growth in 1979-1997 was mainly driven by the increase in TFP. In the absence of TFP growth, the GDP growth rate in the PRC over the most recent two decades would have been just over 5 percent per annum rather than 9.5 percent. TFP in this context could be driven by a number of different elements. Omitted variables such as the rapid growth of education and human capital in the PRC are part of the story. Probably equally important was the ability of the PRC after 1978 to access the best technologies available around the world. Before 1978 the PRC lacked the foreign exchange necessary to pay for large-scale imports of high quality equipment and the policies of the time discouraged such imports in any case. The policy changes after 1978 and the boom in exports and foreign direct investment (FDI) that resulted effectively removed this constraint. The shift in the PRC’s workforce from low-productivity tasks in the rural areas to higher productivity work in the cities is another part of the explanation for the high TFP figures for the reform period. Of possibly even greater significance was the shift of labor out of low-productivity farming activities into higher productivity nonfarm activities such as the township and village enterprises. Research and development expenditures, it should be noted, were small—at least outside of the military sphere—and are not likely to explain much of the TFP growth.

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3 The Chinese define the working age population as being between the ages of 15 and 60 (for men) or 55 (for women), which gives them higher dependency ratios in each period, but does not affect the trend over time.
But potentially measurable inputs of this sort are only a part of the story. Economic reform also led to major improvements in the way Chinese producers managed their resources. This is most clear in the case of agriculture where the freeing up of rural markets and the abandonment of collective agriculture led to a farm output boom in the 1979-1984 period. The surprising acceleration in the growth of township and village enterprises that proved to be more responsive to market forces than the lumbering state-owned sector is another part of the story. As the discussion in the next section will point out, there was also some improvement in the efficiency of the state enterprises themselves.

It may be the case that these high rates of productivity increase would not have been possible in the absence of high rates of capital formation. Put differently, many of the improvements may have been embodied in the new capital stock or required complementary inputs of capital to be effective. In the meta-production function approach used by Lau and Park (1998) and Kim and Lau (1993), the elasticity of GDP growth with respect to capital stock growth is much higher than in growth accounting exercises of the kind used here. The difference is that Lau’s approach results in large economies of scale at low levels of per capita income, whereas the more common approach used here assumes constant returns to scale.

The differences between the two approaches, however, are more apparent than real. We do not have a clear understanding of just what economies of scale mean in an aggregate production function. The most likely explanation is that scale economies at this aggregate level are really another name for the many kinds of external economies that are associated with the early phases of modern economic growth. What shows up as TFP in one calculation is much the same as economies of scale in the latter. The one important difference is that the meta-production function approach implies that much of the TFP growth would probably not occur in the absence of a high rate of growth in the capital stock. The more conventional approach is agnostic on this point.

These growth accounting exercises measure what the PRC has accomplished to date. What can be said from this analysis about the PRC’s future? Clearly the PRC cannot continue to raise the rate of gross capital formation as a share of investment.

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4 For East Asian economies in the early stages of growth, Lau gets capital elasticity estimates of 0.6 and even a bit higher as contrasted to estimates of 0.2 to 0.4 found in most growth accounting studies that assume constant returns to scale. Lau and Park’s (1998) production elasticity of capital for the PRC starts at above 0.7 in the latter half of the 1960s and does not fall below 0.6 until the late 1980s.

5 In formal terms, of course, either economies of scale are there or not, but we do not have a reliable basis for deciding which is the case with respect to aggregate production function estimates. What we do know is that when econometric techniques are used to estimate the coefficients for the meta-production function, they produce estimates that indicate the presence of economies of scale. At least this is the case for the East Asian economies whose per capita GDP is lower than that in the most advanced economies. When one imposes constant returns to scale on the aggregate production function for these East Asian economies, rather than estimating these coefficients using econometric techniques, the result is that whatever is causing the economies of scale in the meta-production function shows up in the residual.
given its already very high level. It follows that growth can only be sustained at the level of the past two decades if TFP remains high as well (or large economies of scale-external economies continue to be embodied in capital). What are the prospects for continued TFP growth? Education or improvements in the stock of human capital have a long way to go before the PRC catches up with either its East Asian neighbors or the post-industrial economies. There is still a large body of underemployed labor in the countryside, so productivity growth from transferring this labor to more productive urban occupations will continue for some time. There are questions one can raise about the PRC’s ability to continue to expand exports and foreign direct investment, but maybe the foreign exchange constraint is no longer binding and it does not matter whether the share of exports in GDP continues to rise.6

The central question for the future, however, does not involve these potentially measurable sources of productivity growth. The central issue is whether the PRC can continue to generate improvements in the efficiency of resource use of the kind achieved during the first two decades of reform. Were these improvements one-shot gains whose potential has now been exhausted? Even if the potential for improvements remains, will the Chinese government have the capacity and the will to do what is required? As the discussion in the second part of this paper makes clear, the PRC’s current reform effort falls far short of some free market ideal and there is thus considerable room for further reform. But will these reforms have the same impact as initial efforts in this direction even if the PRC’s government carries them out with vigor? There is no definitive answer possible to these questions. We can describe the reforms that need to be completed. We also know that other economies that went through a similar high growth and structural change period, notably Republic of Korea and Taiwan, China, achieved per annum rates of growth in the 8 to 10 percent range for nearly three decades. Furthermore these economies started from a higher per capita income than was the case of the PRC in 1978. Thus, if the PRC can continue to reform its economy, it too might be able to sustain 8 percent growth or possibly even more for another decade or even two.

The GDP and TFP growth rates are one way to measure whether an economy is performing as well as it could in response to market forces. Another approach is to look at the structure of the economy to see if there is anything unusual about that structure that might provide some guidance to why an economy was performing well or badly. The standard view of the PRC’s growth strategy prior to the beginning of reforms in 1978 is that the government put most of its resources into industry to the neglect of agriculture, and that most of the resources going to industry went to the

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6 The foreign exchange constraint could no longer be binding (in the two-gap model sense) for two major reasons. First, the PRC may now have achieved a level of export and FDI growth that provide more foreign exchange than investors and consumers in the PRC can use effectively (or as much as they can use effectively). Second, the PRC itself is now able to produce much of the sophisticated equipment it needs that before it had to import. The two-gap model has no real relevance in an advanced industrial economy that can readily substitute domestic production for imports if relative prices and comparative advantage change.
heavy or producer goods industry sector. Because the PRC attempted to develop machinery, steel, and petrochemicals at too early a stage of development, the cost of this industrialization effort was excessive and is a major reason why productivity was so low. The PRC, the argument goes, should have put more resources into agriculture, and industrial investment should have concentrated on the consumer industries in which the PRC had a comparative advantage.

There is a clear validity to this standard view of the prereform period, but the argument can be overdone. Data for the shares of the primary (agriculture plus mining) and secondary (mainly industry) sectors are presented in Figures 1 and 2. The figures are for the shares of NMP for the years prior to 1978 because those are the only data available since the PRC did not begin calculating GDP until the late 1970s. The figures for the years 1978 onward for the PRC and for the large country pattern worldwide are expressed as shares of GDP. Data on the PRC have been recalculated in terms of 1992 prices when market forces were the primary determinant of relative prices. Share data of this sort is particularly sensitive to relative price distortions of the kind that prevailed in the PRC prior to the reform period when prices were set administratively.

Figure 1: Share of Industry in NMP and GDP
The estimates in Figures 1 and 2 were derived from official Chinese gross domestic product (GDP) and NMP data. These data are published in State Statistical Bureau, Zhongguo Tongji Zhaiyao 1998 (China Statistical Summary 1998, 12-5); and State Statistical Bureau, Zhongguo Tongji Nianjian 1989 (China Statistical Yearbook 1989, 29-30). The PRC did not calculate GDP for the years prior to 1978 but did calculate the closely related net material product (“national income” in Chinese terminology). Prices in the PRC in the 1950s through the 1970s were determined administratively rather than through market forces, and the deviation from what market prices would have been appears to be very large. Industrial prices, in particular, were generally set at monopoly price levels in order to generate revenue for the state, and these upwardly biased prices led to a substantial upward bias in NMP growth rates.

To eliminate this bias, the GDP and NMP figures have been recalculated in 1992 prices, the last year for which NMP figures are available. The year 1992 is also one in which most prices were determined by reasonably competitive market forces. Deflators (price indexes) for each of the sectors were derived by dividing the current price sector estimates by the Chinese official production index at constant prices. That price index was then used to convert the sector production figures for each year and each sector into constant 1992 prices. The industry sector in this estimate also includes construction.

As stated earlier, the Chinese corrected for the impact of the very different relative price structures in the 1950s through the 1970s when they calculated NMP in “comparable prices”. But there is clear evidence that the NMP growth rates for the earlier years are in constant prices for those earlier years. Because these earlier year unchanged prices were distorted in the direction of very high prices for industrial products and low relative prices for agricultural products, we felt that the use of prices determined mainly by market prices rather than by administrative fiat made more sense. Because there were no market prices for these earlier years, we used the prices of 1992, which is one of the first years when most Chinese prices were determined by market forces. It is true, of course, that 1992 prices may not reflect the relative scarcity situation in the earlier years, but we submit that these prices are more likely to be closer to some true measure of relative scarcity than are the highly distorted prices that actually existed in the 1950s and 1960s.

The large country pattern in the charts is the “very large country” pattern of GDP shares at different levels of per capita income (see Chenery and Srinivasan 1989, 1725-6).
What these figures indicate is that the PRC in the 1950s was almost exclusively an agricultural economy, more agricultural than other nations with similar levels of per capita income such as India. All of industry, not just manufacturing, amounted to around 10 percent of GDP (and a slightly higher percentage of NMP that excludes many services). That figure is roughly the same as the industry share of Ethiopia in the 1990s. The government emphasis on industry, therefore, could be seen as an effort to get a better sector balance in the development of the PRC’s economy. By the 1970s the PRC’s agricultural and industrial shares in GDP had caught up to the typical pattern found in other large countries at a similar level of per capita income. It is interesting to speculate what would have happened in the 1980s and 1990s if the PRC had not begun instituting market-oriented reforms. Would the share of industry kept on rising faster than the typical pattern of large countries while the share of agriculture fell well below the typical pattern? The PRC did, however, introduce market forces into the economy beginning with agriculture. The share in GDP of the primary and secondary sectors traces the typical large country pattern throughout the 1980s, and in the case of agriculture, through the 1990s as well.

Data for the 1990s in Figure 2 suggests departure from the typical large country pattern by allowing the industrial share in GDP to continue to rise. Industry’s share in most countries levels off at around 40 to 45 percent of GDP and then falls, as the service sector becomes dominant. The share of industry in the PRC, in contrast, passed 50 percent in 1995 and continued to rise. The share of the service sector in the 1990s began to fall after rising throughout the 1980s. Services were typically neglected or even suppressed under the kind of Stalinist economic policies pursued in the PRC in the prereform period, so the rapid catch-up in the 1980s was to be expected once the sector was freed from the constraints of a centrally planned economy. The decline in the service sector share in the 1990s is unexpected. Both the decline in the service sector share and the unusually high share of the industrial sector would appear to be the beginning of a major deviation from the expected pattern. Conceivably, such a deviation is justified because of special conditions that pertain only to the PRC. An equally plausible hypothesis, however, is that this emerging pattern reflects the partial nature of the PRC’s economic reforms. Industrial enterprises that ought to be closed down continue to exist and even to expand. This is a hypothesis, it should be emphasized. Time and further analysis are needed before it becomes more than a hypothesis.

The one clear policy-induced distortion in the pattern of Chinese growth was the overemphasis on heavy or producer goods industry throughout the prereform period. In the East and Southeast Asian economies in general, the producer goods sector starts at 40 percent or less7 of all industry and then rises steeply as per capita GDP increases from about $1,000 (1990 purchasing power parity US dollars) to $5,000.

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7. These estimates are based on regressions estimated from data compiled by the authors.
The share of heavy industry in the PRC, in contrast, rose from under 36 percent of gross industrial output in 1952 to 47 percent in 1957 and to 57 percent in 1970 and 1978. Purchasing power parity per capita GDP in the PRC in these same years only rose from around $260 (in 1990 purchasing power parity US dollars) to less than $500. During the early years of economic reform in the early 1980s, this share actually fell slightly and then began again to rise reaching 60 percent in the mid-1990s when the PRC’s per capita GDP had reached roughly $2,000 in purchasing power parity terms. Heavy industry is not identical with the producer goods industry and gross value shares are not the same as value added shares, but the concepts are close enough to make comparisons of Chinese data with the patterns in East and Southeast Asia meaningful.\(^8\)

The PRC’s premature emphasis on heavy industry beginning in the 1950s is one major source of the PRC’s state-owned enterprise (SOE) problem of the late 1990s. By developing this sector before the PRC had the necessary technical and managerial skills, the government created a large sector that could not compete internationally and, in many cases, could not be effectively reorganized to compete. Much of this heavy industry is concentrated in the PRC’s Northeast and it is no accident that the Northeast is the home to a large share of the PRC’s most poorly performing state enterprises. The reform period did not further exacerbate the problems created by the early overemphasis on heavy industry, but it did not fully solve them by the late 1990s either.

The PRC’s post-reform growth and structural change have been impressive by any reasonable standard. The reforms put in place led to both acceleration in overall growth and a correction in the structural distortions that had been created in the 1950s through the 1970s. Distortions remained, however, and the partial nature of some of the reforms may have been responsible. Before one can make a judgment about the relationship between the structural distortions and reforms, however, one needs to have a clearer picture of the evolution of the Chinese reform effort and the state of that effort in the late 1990s.

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\(^8\)The average ratio of value added to gross value output in the heavy industry sector was 26.6 percent in 1996, whereas that in light industry was 24.0 percent. Light industry as defined by the PRC covers mainly consumer goods, while heavy industry covers mainly producer or capital goods.
Incremental Reform and the Dual-track Transition to a Market Economy

The PRC’s market-oriented reforms started with the gradual liberalization of economic activities, step by step, and sector by sector. Some new market elements were welcomed, but the reforms of existing institutions, especially those that involved vested interests, met with strong resistance. Resistance also came from those in the government and the party who favored a planned economy because they believed that such a system was more suitable for the PRC. As a result, the PRC began moving along a road of incremental change—developing new systems without first reforming the existing institutions. By such a process, reforms may proceed smoothly because strong resistance is avoided, but may also continue for prolonged periods during which the different systems exist alongside and often in conflict with each other. This dual-track transition took place in almost all sectors.

It should be noted, however, that this step by step dual-track approach did not mean that all reforms were introduced slowly or gradually. The abolition of the collective agriculture system in favor of a return to household farming, for example, was completed in less than five years. Therefore, individual reforms in some cases proceeded very rapidly. What differentiated the Chinese experience from that in parts of Eastern Europe was that the Chinese reformed one or two sectors at a time and the hardest problems were left last. Within particular sectors, changes sometimes proceeded rapidly as in the case of the return to household farming, and sometimes gradually as in the case of the dual price system described below. There was no “shock therapy” effort to transform the whole Chinese economy into a market economy overnight.

Economic liberalization started in 1978 with the production and transaction of many agricultural products. Farmers were allowed to sell their products on the free market after meeting their quotas for procurement sales set by the state planners. Later such an arrangement was introduced into many industrial sectors as well. The proportion of planned production of total industrial output value was reduced from over 90 percent in 1978 to 5 percent in 1994.

The dual-track system was first used officially in price reform (Shi and Liu 1991). There were three kinds of pricing during the transition: planned fixed prices, state guided prices, and market prices (Table 2). The reform started with two steps: (i) opening the free market and allowing people who were willing to pay higher market prices to purchase more on the market, while still keeping state-rationed supply unchanged at fixed low prices; then, (ii) adjusting the official prices in order to narrow the gap between the market clearing price and the official price. This latter step was usually accompanied by consumer subsidies (or tax deductions for enterprises) in order to minimize the impact on consumers’ real income. Purchases at market prices were then increased as a share of total consumption and the difference between the official price and the market price was narrowed through several price re-
adjustments. When the time came for the convergence of the two tracks, the importance to consumers of planned supply at official prices was often negligible. A good example is the case of food pricing. After a 13-year transition from 1979, the official price supply had decreased to about 20 percent of total food consumption in terms of sales value. As a result, when the final steps toward convergence took place in 1992, no “shock” was observed.

By the end of 1994 about 40 kinds of goods still remained subject to some degree of state pricing for at least a portion of their sales. Among these were state purchase prices of grain, cotton, and tobacco; together with the purchase and sale of chemical fertilizers, coal, electricity, oil, natural gas, and chemical materials. The most controversial remaining price control was the state pricing for grain and cotton. The artificially low prices of natural resources and public utilities also caused a great deal of inefficiency and waste. As the data in Table 2 make clear, however, as early as 1993, over 80 percent of all retail sales together with sales of agricultural and intermediate products were at market prices, and that percentage continued to rise after 1993.

Table 2: Dual-Track Transition of Pricing System

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<tbody>
<tr>
<td>Agricultural goods*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Planned price</td>
<td>94.3</td>
<td>37.0</td>
<td>24.0</td>
<td>31.0</td>
<td>22.2</td>
<td>12.5</td>
<td>10.3</td>
</tr>
<tr>
<td>State-guided price</td>
<td>0.0</td>
<td>23.0</td>
<td>19.0</td>
<td>27.0</td>
<td>20.0</td>
<td>NA</td>
<td>7.0</td>
</tr>
<tr>
<td>Market price</td>
<td>5.6</td>
<td>40.0</td>
<td>57.0</td>
<td>42.0</td>
<td>57.8</td>
<td>NA</td>
<td>82.7</td>
</tr>
<tr>
<td>Retail sales**</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Planned price</td>
<td>97.4</td>
<td>47.0</td>
<td>28.9</td>
<td>30.0</td>
<td>20.9</td>
<td>12.2</td>
<td></td>
</tr>
<tr>
<td>State-guided price</td>
<td>NA</td>
<td>19.0</td>
<td>21.8</td>
<td>25.0</td>
<td>10.3</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>Market price</td>
<td>3.0</td>
<td>43.8</td>
<td>49.3</td>
<td>45.0</td>
<td>68.3</td>
<td>84.6</td>
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<tr>
<td>Intermediate goods</td>
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<td></td>
</tr>
<tr>
<td>Planned price</td>
<td>100.0</td>
<td>44.6</td>
<td>36.0</td>
<td>18.7</td>
<td>12.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State-guided price</td>
<td>0.0</td>
<td>19.0</td>
<td>18.3</td>
<td>7.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market price</td>
<td>0.0</td>
<td>36.4</td>
<td>45.7</td>
<td>81.0</td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>

*Sales at different prices as percent of total sales

*There was a significant change in grain price policy and procurement purchase policy at the beginning of 1994 when the government strengthened control over grain pricing and increased the share of procurement purchasing. But there are no data available to show the changes.

**Retail sales refer mostly to sales of consumer goods.

In the international sphere, with the steady rise of over nearly two decades, the PRC’s international trade reached US$ 325.06 billion in 1997, up from $20.64 billion in 1978. A total of US$ 220 billion in FDI flowed into the PRC through 1997, making the PRC the largest FDI recipient among developing countries since 1993. Market-oriented reforms, particularly in the handling of foreign exchange, were a central element in this success.

The reform of foreign exchange involved two currencies and two markets (two rates). The market was separated by two currencies, renminbi (RMB) and foreign exchange certificates (FEC) from 1979 through the 1980s. In addition, there was a black market during these same years. An official parallel swap market was introduced in 1986. By the time the unification of the official and swap market rates took place in 1994, the share of the swap market trade accounted for over 70 percent of total foreign exchange transactions. In 1996 the RMB was made convertible on current account.

The gradual liberalization of the foreign exchange market at least on current account was accompanied by several major devaluations, the most recent occurring in 1994 when the nominal value of the renminbi fell by 50 percent against the dollar. Inflation reduced the real impact of the 1994 devaluation, but that devaluation, together with continuing low labor costs, kept Chinese exports internationally competitive through 1997. By the end of 1998, however, the Asian financial crisis contributed to at least a temporary halt to the PRC’s export drive. Exports to North America and Europe continued to grow rapidly in 1998, but exports to other countries in Asia fell. At least initially, the drop in Asian exports had more to do with the drop in incomes in the hard-hit Asian economies than it did with the increasing international competitiveness of those economies generated by their large, crisis-induced currency devaluations. At the end of 1998, the PRC still had a large current account surplus.

Although the nominal tariff on imports was high at an average 33 percent in the early 1990s, the actual tariff rate on imports was as low as 3.2 percent in 1995 because of the widespread practice of tariff exemption on capital and intermediate goods for most investment projects. At the beginning of 1996, the average nominal tariff rate was cut to 26 percent, but tariff exemptions were removed for most cases from April 1996. It was announced that the tariff rate would be further lowered to 15 percent by the year 2000. The restrictive licensing system that allowed only the licensed state trading companies to do foreign trade business was still in force, but the number of state trading companies had expanded greatly. Smuggling of consumption goods (automobiles, cigarettes, electronic goods) was high, partially due to the corruption of the customs service and local administrations.
Evolution of a Legal System

Having a long history without the rule of law and more than 30 years of central planning, the PRC has faced tremendous difficulties in establishing the kind of legal system required by a market economy. There have been over 40 new sets of laws adopted since the early 1980s. The process of drafting and adopting laws has accelerated in recent years. Among others, a Bankruptcy Law was passed in 1988; a Consumer Rights Law in 1993; a Corporate Law in 1994; a Central Bank Law, Commercial Bank Law, plus a Labor Law in 1995; and a Commercial Paper Law in 1996. Most of the laws are copies of established laws in developed countries with certain compromises to accommodate the current Chinese reality. Copying makes the law-drafting process easier, but at the same time, the laws are more likely to remain laws on paper only because law enforcement is weak. The speed in drafting and adopting new laws, however, reflects the rapidly growing demand for these laws resulting from expanding market activities.

Alongside and in contrast to the formal legal system, the Chinese economy and society in practice are characterized by the prevalence of:

(i) Informal rules and arrangements, many of which are not consistent with the law. This is partially because reforms often undercut or eliminate the old regulations before the new formal institutions are set up. Informal arrangements sometimes play a positive role in breaking down old rules and in developing new practices. This practice, however, is unfavorable for the development of the rule of law.

(ii) Administrative decisions and arbitration still play the most important role in settling disputes. Government regulations, rather than laws, are what most people refer to and follow. Going to court is still the last thing people think of doing, although the number of legal cases is increasing.

(iii) The protection of private property rights is still incomplete. Business contracts, especially private contracts, are not well protected or enforced by laws. The rapid growth of overdue bank debt and interenterprise debt are examples. Another recent example of the lack of contract enforcement is the inability to develop housing mortgage credit because there is simply no law that allows enforceable eviction.

Ownership Change and State-Owned Enterprise Reform

The most important element of the dual track transition has been in the ownership structure of the economy. The PRC’s progress in the development of a market
system and its rapid economic growth have mainly been due to the dynamic expansion of the nonstate sectors. These nonstate sectors include private and semiprivate enterprises, community-owned rural industrial enterprises, shareholding corporations, foreign joint venture companies, and individual businesses.

Ownership change started from the very beginning of the reform effort, when in 1979 through 1983, the collective or commune system was replaced by household farming. This single reform made agriculture, which accounted for over 30 percent of GDP, de facto private and the least state-controlled sector. When farmers became able to decide not only what they wanted to do on their contracted land but also what they would do with their surplus labor, small private business and community-owned industrial enterprises—the so-called township and village enterprises (TVEs)—began growing rapidly, building in part on the earlier rural small-scale industry program. TVEs are still a transitional form of ownership and have undergone dramatic institutional changes as they developed.9 With the rise of the TVEs together with other collective and privately owned industry, the share of state-owned enterprises in the total gross value of industrial output fell to 26.5 percent in 1997 (from 77.6 percent in 1978).10

Another important factor underpinning the changes in ownership structure was the increasing capital inflow and the growth of foreign joint ventures, especially those of overseas Chinese. Of the US$42 billion foreign direct investment made in 1996 alone, 59.2 percent was from Hong Kong, China; Macao; and Taipei, China. In 1995, the foreign-invested companies produced about 14.6 percent of total industrial output, and about 50 percent of manufactured consumer goods on the domestic market, and accounted for 39 percent of international trade. The nonstate sectors developed more rapidly in those regions on the PRC’s coast where reform and opening took place earlier and faster. In many of these rapidly growing coastal provinces, the nonstate sector contributed more than 70 percent of GDP by the end of 1995.

The remaining key hard core problem for the Chinese economy is the state sector, including the SOEs, the state-owned banks, and the government administration. Reforms in the state sector have mainly involved decentralization of decision-making powers and managerial adjustments without change or ownership. These reforms have resulted in “decentralized SOEs” and “autonomous” local governments, all playing increasing roles in determining resource allocation and income distribution within an unchanged ownership framework.

The impact of these soft reforms on state enterprises can be analyzed more systematically, at least in principle. Unfortunately, work to date gives us only tentative answers to the forces driving productivity and structural shifts during the post-

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9 One of the major advances in this area has been the recent development of the “collective shareholding system” in TVEs. This system involves redistribution or sales of up to 50 percent of property rights, in the form of shares among workers of the firms or members of the community.

1978 reform era. And little of the work so far allows for comparisons with the pre-reform era. Micro data sets for the pre-reform era, for the most part, do not exist.

From various micro studies we do know that early on in the reform period, state enterprise managers began paying more attention to profits rather than to gross value output as in the past (see for example, Byrd and Tidrik 1987). The main reason for this change was that planners made profits, rather than gross value output, the key enterprise objective; also, profits were central to whether managers and workers received bonuses at the end of the year. Even before the post-1978 reforms, Chinese state enterprise managers were less constrained by planners’ dictates than was the case in the Soviet Union and that flexibility increased greatly after the reforms, particularly after 1984 (Granick 1990).

There have also been various attempts to measure productivity in the industrial sector. A study by Li et al. (1993) for 1981-1987 following the methodology pioneered by Dale Jorgenson indicates that there was positive productivity growth in 24 of the 32 sectors for which data were available, although in six of those sectors, productivity growth was less than one percent per year (Li et al. 1993, 69-70). The revised calculations of Jefferson, Rawski, and Zheng (1995) also indicate that there was significant total factor productivity growth in both state-owned and collective industry. The collective industry TFP figures for 1980-1992 were somewhat higher than those for the state sector, but by less than one percent in most periods (Jefferson et al. 1995, 11).

Despite these improvements in productivity, the profitability of SOEs has been continuously deteriorating. Market competition from nonstate sectors forces monopoly profits down. Wage payments, bonuses, fringe benefits, and “publicly financed consumption” (which are often disguised as costs) have increased more rapidly than output, resulting in a decline of returns to capital (Fan and Woo 1993). The percentage of loss-making SOEs increased to 39 percent of all SOEs in 1997.

Chinese enterprise profits, however, are probably a poor measure of anything related to efficiency. Chinese accounting procedures have yet to be standardized and treatment of interenterprise debt (accounts receivable) probably varies from one firm to another. Freed-up markets have also led to major changes in relative prices that have favored certain sectors at the expense of others. Data on producer price changes and the shifting patterns of sector profits are presented in Tables 3 and 4. If one looks at total industrial profits (before taxes) between 1986 to 1994, 45 percent of those profits in 1994 came from four sectors: petroleum and gas extraction, petroleum processing, smelting and pressing of ferrous metals, and electric power. Tobacco accounted for another 18 percent. In 1986 these same four sectors accounted for only 30 percent of all before-tax industrial profits. Profits in textiles and food, which accounted for 12 percent of all industrial profits in 1986, accounted for only 2 percent of all profits in 1994 and experienced a net loss in 1996. After taxes, both sectors were running at a loss in 1994 as well.
Table 3: **Producer Prices and Profits**

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<tbody>
<tr>
<td>Overall index</td>
<td>96.8</td>
<td>100.0</td>
<td>135.7</td>
<td>190.1</td>
<td>281.7</td>
<td>333.1</td>
</tr>
<tr>
<td>Power</td>
<td>92.2</td>
<td>100.0</td>
<td>111.0</td>
<td>160.8</td>
<td>304.5</td>
<td>377.1</td>
</tr>
<tr>
<td>Petroleum</td>
<td>81.9</td>
<td>100.0</td>
<td>124.6</td>
<td>198.1</td>
<td>504.5</td>
<td>639.6</td>
</tr>
<tr>
<td>Coal</td>
<td>85.7</td>
<td>100.0</td>
<td>151.6</td>
<td>263.8</td>
<td>444.4</td>
<td>562.4</td>
</tr>
<tr>
<td>Machine building</td>
<td>104.5</td>
<td>100.0</td>
<td>134.8</td>
<td>184.0</td>
<td>241.2</td>
<td>260.5</td>
</tr>
<tr>
<td>Food manufactures</td>
<td>88.2</td>
<td>100.0</td>
<td>137.6</td>
<td>174.3</td>
<td>244.1</td>
<td>313.9</td>
</tr>
<tr>
<td>Textiles</td>
<td>114.8</td>
<td>100.0</td>
<td>141.7</td>
<td>192.3</td>
<td>273.0</td>
<td>307.4</td>
</tr>
</tbody>
</table>

The reasons for these sector changes in profitability can be deduced from the sector indices of producer prices. In the 1980s and before, the PRC’s planners kept petroleum, coal, and raw material prices low, well below world prices. Consumer manufactures’ prices, in contrast, were high in order to generate profits that were mostly turned over to the state. It was not until 1993-1994 that the Chinese government finally began to allow energy prices to rise to world levels, thereby raising the profits of these sectors but cutting into the profits of others. State enterprises in the food and textile sectors faced the added problem of vigorous competition from the collective sector as well as from international competitors.

Table 4: **Before-tax Profits of State Enterprises for Selected Major Sectors**

(in millions of yuan)

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<tbody>
<tr>
<td>All industry</td>
<td>134,137</td>
<td>150,314</td>
<td>287,625</td>
<td>273,715</td>
</tr>
<tr>
<td>Light industry</td>
<td>53,151</td>
<td>67,943</td>
<td>88,900</td>
<td>91,859</td>
</tr>
<tr>
<td>Heavy industry</td>
<td>80,986</td>
<td>82,321</td>
<td>198,725</td>
<td>181,854</td>
</tr>
<tr>
<td>Coal</td>
<td>-715</td>
<td>-4,949</td>
<td>6,323</td>
<td>11,877</td>
</tr>
<tr>
<td>Petroleum/gas extraction</td>
<td>4,860</td>
<td>118</td>
<td>28,083</td>
<td>30,979</td>
</tr>
<tr>
<td>Petroleum processing</td>
<td>10,141</td>
<td>9,554</td>
<td>20,010</td>
<td>25,102</td>
</tr>
<tr>
<td>Ferrous metal smelting/pressing</td>
<td>13,776</td>
<td>17,235</td>
<td>43,933</td>
<td>21,163</td>
</tr>
<tr>
<td>Electric power</td>
<td>11,654</td>
<td>17,277</td>
<td>38,780</td>
<td>49,811</td>
</tr>
<tr>
<td>Tobacco production</td>
<td>13,246</td>
<td>27,190</td>
<td>52,644</td>
<td>67,923</td>
</tr>
<tr>
<td>Textiles</td>
<td>11,294</td>
<td>9,795</td>
<td>6,884</td>
<td>-2,814</td>
</tr>
<tr>
<td>Food manufactures</td>
<td>5,162</td>
<td>5,121</td>
<td>1,156</td>
<td>1,063</td>
</tr>
</tbody>
</table>


Rising or declining profits over time are, therefore, not a measure of changes in sector productivity or efficiency over time. The many loss-making state sectors as of 1994 and 1996, however, do indicate that the PRC has a serious problem that the shift to world market prices is fully revealing only now. Stripped of monopoly rights
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and having to pay world prices for their inputs, many state enterprises are unable to run at a profit.

It is also the case that because of fiscal and financial reforms in the 1980s, SOEs now receive far fewer subsidies directly from the state budget.\textsuperscript{11} But they do receive “quasi-subsidies” from the state banks in the form of “policy loans” and overdue debts.\textsuperscript{12} These quasi-subsidies in turn are the main reason behind the delay in financial sector reform. With much higher access to bank credit, the average debt to asset ratio of SOEs has increased to over 80 percent in recent years.\textsuperscript{13} Bad loans were estimated officially at 25 percent of the loan portfolio of state banks at the end of June 1996. In addition, the interenterprise debt (IED) (“triangular debt”) continued to increase rapidly and the IED-GDP ratio rose to 42.99 percent in 1996, among the highest in the world (Fan 1996).

The problem of the SOEs, therefore, is the current core problem in the Chinese economy, and is centrally related to all other problems including financial underdevelopment, macroeconomic instability, corruption, government inefficiency, and the lack of the rule of law. But what is the basic cause for the poor performance of the SOEs? The major managerial problems usually complained about are: (i) government selection of managerial personnel; (ii) government interference in decision making with regard to investment, production, and income distribution; (iii) government decision of the use of existing capital assets; and (iv) bureaucratic regulations and the lack of the rule of law. While all these problems still exist, more and more people have come to believe that all of these problems are related to the ownership issue.

Ownership change, these people believe, will make it easier to change the incentives facing enterprise management in a desirable direction. Private ownership, for example, should help weaken the close ties between the enterprises and government officials, which should make it easier to harden the soft budget constraint. Private ownership, of course, does not guarantee this favorable outcome since government-enterprise relations may remain strong even without any formal state ownership of enterprise assets, but that is less likely to be the case than when the state does own the assets.

There is no centrally promoted program of mass privatization in the PRC and public ownership is still the central part of the official formula for a socialist market economy. Ownership reform, however, has already started, albeit on a slow path.

Shareholding started to be used as a way to reform some SOEs beginning in 1984, and then accelerated after 1988 when two stock exchanges were set up in

\textsuperscript{11} The nominal amount of total budgetary subsidies to loss making enterprises was 36.6 billion yuan in 1994, only slightly more than that in 1985 (32.4 billion yuan), without discounting for inflation.

\textsuperscript{12} These kinds of subsidies are a major reason why state enterprises face a “soft budget constraint” as that term is used by Kornai (1992).

\textsuperscript{13} It was officially estimated as 79.3 percent in the first half of 1995.
Shanghai and Shenzhen respectively. Corporate structure is widely used in the newly established companies or joint ventures. By the end of 1994, some 25,800 companies formally registered as shareholding corporations; among them 290 were listed on the market and that number rose steadily in the years that followed. The national average of private shares as the proportion of total shares of shareholding companies is about 30 percent, the rest are state shares consisting of “state shares” and “share of state owned entities”. The high percentage of state shares, of course, makes the current shareholding companies more like the conventional SOEs.\(^{14}\)

The sale of existing assets of SOEs has been nominally permitted since late 1993,\(^ {15}\) but such sales have been very restricted by official policy. Local governments at county and city levels started to act in 1993, however, when they found it would be beneficial to get rid of the financial and fiscal burden of SOEs on the local economy. Besides creating joint ventures, an increasing number of small SOEs were sold to private owners, to TVEs, and to foreign investors. While it is difficult to find investors to buy the equities of existing SOEs, selling securitized net equities (the total value of assets minus total debt) to workers of the enterprises concerned and thereby converting these companies to so-called “cooperative shareholding companies”\(^ {16}\) became a popular way for SOE restructuring at the local levels of the economy.\(^ {17}\) In some counties of Shandong province, up to 70 percent of small SOEs were sold in this way. The results of such a restructuring so far are quite positive and encouraging. Most firms have improved their financial situation, while those that turn out to be unprofitable often enter into bankruptcy voluntarily without much government intervention.

The central leadership began airing a new policy of zhua da fang xiao (improving the large SOEs while liberalizing the small ones) in 1995. Although the formal documents remained ambiguous about how to liberalize the small SOEs, the policy was definitely to encourage the local process of privatization at least for small enterprises. The effort to concentrate reform of state enterprises on the largest 1,000-

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\(^{14}\)In the statistics, when an SOE has turned into a shareholding company, it is no longer put in the category of SOEs. So any improvement in enterprise performance through corporatization will not show up in the statistical performance of the SOE sector, but will only be reflected in statistics covering all forms of ownership.

\(^{15}\)In October 1993, the Third Plenary of the 14th Central Committee of the Chinese Communist Party adopted a new comprehensive “Decisions of Economic Reform”, which for the first time announced, among other things, (i) the objective of reform is a “socialist market economy”; (ii) the nonstate sector should be encouraged to develop along with the state sector; (iii) the reform of “property rights” of SOEs and sales of state assets should be allowed; and (iv) the corporatization of SOEs is taken as the main intermediate way for institutional change. This document is regarded as a major breakthrough for the reform agenda of the top leadership.

\(^{16}\)This is a special form of shareholding with many characteristics of public ownership. The shares of the firm are owned by employees individually, but no matter how different the amount of shares held, everyone in the firm has equal voting rights and part of the dividend is distributed equally among the employees. After a period of time, the transfer and trade of shares is allowed, and, as a result, the concentration of ownership becomes a possibility.

\(^{17}\)“Cooperative shareholding” was first developed in TVEs. By the end of 1995, 3 million TVEs had been converted into cooperative shareholding companies accounting for more than 20 percent of the total. In some regions such as Jiangsu, Shandong, and Zhejiang provinces, over 50 percent of TVEs use this system.
2,000 SOEs and let the rest fend for themselves was formally endorsed at the Party Congress in 1997 and at the National People’s Congress in 1998. How this decision will be implemented, however, remains a question.

One of the main obstacles to the restructuring of SOEs is the existing welfare system for state employees, including the pension program, medical care, housing, and unemployment insurance. Compared to the former Soviet Union and Eastern Europe, the PRC’s welfare reform is much easier because a majority of the population, those living in rural areas, was never covered by the system. On the other hand, it is more difficult because the social welfare system was all enterprise-linked.

Pension reform requires delinking retirement pensions from the enterprises and then setting up national pension funds. Pension reform started with various experiments, beginning in 1986 and accelerating in 1994, when the State Council adopted national regulations for a new system. By the end of 1995, about 80 percent of state employees had participated in the nationalized pension program although the full completion of the transition may take another generation. Most state employees can now take pension accounts with them when they shift jobs, although the terms of the pension may not be as generous as when they had stayed.

Housing reform has been under way since the late 1980s. By the end of 1995, it was estimated that 70 percent of previously public owned (either by government or by SOEs) houses and apartments had been sold to the current tenants at significantly discounted prices. Property rights are still partial, but full rights are promised after a transition period of 5 to 10 years. More and more enterprises have stopped providing free housing for their employees.

Medical care reform is moving in the direction of increasing personal accountability and reducing the soaring costs, but not much progress has been made so far. Commercial health insurance is playing a bigger role as most new companies are turning their health programs over to commercial insurance companies.

Unemployment insurance is enforced by the government and requires the employers and employees to make contributions to the insurance fund. So far, this insurance still plays a secondary role in the economy as most de facto unemployed still stay with the enterprises and are counted as “off duty workers” (xia gan zhi gong). For example, in 1995 there were only 2.1 million registered unemployed workers, but there were 7.5 million “off duty workers” in firms. These “off duty workers” claimed basic wages and other welfare benefits paid by the enterprises rather than by the government labor agency.

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This figure refers only to those unemployed persons who have worked, and excludes those who have never had a job.
Reform and Policies at the Macro Level

While growing at an annual average rate above 9 percent, the PRC managed to maintain basic macroeconomic stability during the reform period, although the threat of instability has always been present (see Figure 3).

Figure 3: PRC’s Macroeconomic Performance

(i) Despite repeated overheating and four economic cycles since the early 1980s, the growth of GDP has never been negative and most years was above 7 percent per annum. The PRC’s economy continued to maintain a fairly high growth even during the first two years of the Asian financial crisis, 1997-1998.

(ii) Although the price level has been increasing since the late 1980s, inflation measured by the Consumer Price Index was single-digit in most years, with the highest increase being the 24.1 percent registered in 1994. In contrast, in 1997, retail prices rose by only 0.8 percent and consumer prices by 2.8 percent.
(iii) Rural unemployment or underemployment has been reduced thanks to the rapid growth of rural industries that now employ more than 120 million rural laborers. Urban unemployment as officially registered was stable at annual rates around 2 to 3 percent in most years, with a high of 4.9 percent in 1980. In 1997 the figure stood at 3.1 percent. As pointed out above, there were also 7.5 million “off duty workers” in 1995 and that figure has been rising as SOE reform takes hold.

(iv) Government budget revenue has declined from 31 percent of GDP in 1978 to 11.6 percent in 1997. The state budget deficit rose to 2.31 percent of GDP in 1994, up from 0.76 percent ten years earlier and then began to slowly decline as a share of GDP. This deficit, however, does not include the “quasi-deficit” when the balance sheets of the state banks are added in. Total outstanding government borrowing (including government’s foreign borrowing) at the end of 1994 was about 5.4 percent of GDP (not including other public sector borrowing such as that by SOEs, government departments, and state banks).

(v) Foreign trade grew at an average annual rate of 16.6 percent over the past 17 years. Trade and current account deficits were registered for the most part of the 1980s while a surplus occurred in the 1990s, except for 1993. Foreign reserves increased to US$140 billion in 1997. At the end of 1994, the balance of foreign debt was US$92.8 billion with a debt-service ratio of 9.1 percent and a liability ratio of 17.6 percent.

One of the main engines for the PRC’s economic reform and growth at the beginning of the 1980s was fiscal decentralization. The “fiscal responsibility system” introduced in 1984 allowed local governments to retain revenues after remittance (for a certain period) of fixed amounts of revenue to the central government, while giving incentives to the localities to expand their revenue base. The “contract responsibility system” for the SOEs was similar in that it also involved a fixed revenue remittance by these enterprises. These changes contributed to the fall in government budget revenue, and the fall in revenue in turn contributed to the fall in the central government’s budget expenditures as a share of total government expenditures—from 60 percent in the 1970s to 27.5 percent in 1997. This trend led to a great improvement in the efficiency or resource allocation and improved the incentives of enterprises, individuals, and local governments, but the decline in central government revenue sig-
nificantly weakened that government’s ability to conduct fiscal policy and income redistribution.

To stop this trend, the government took a dramatic step at the beginning of 1994 toward ending the “contract responsibility system” and reforming the fiscal system. The key points of this reform were the introduction of a value-added tax as the major revenue source, and the setting up of a tax sharing system to replace the previous fixed amount remittance scheme. Revenue as a share of GDP nevertheless continued to decline in 1994 and 1995, but began rising slowly in 1996 and 1997. “Off budget revenue” grew even more rapidly: from 4.0 percent of GDP in 1994 to 6.8 percent in 1997. This revenue does not show up in the formal budget accounts and is retained by both local governments, and departments of the central government. The growth of off-budget revenue, however, has been accompanied by reports and complaints about the abuse of taxation powers by local governments, and the high and rising tax burden (or fee burden) on enterprises and individuals. Such revenue, moreover, has been irregular, unregulated, not transparent, and less monitored. It may also cause greater regional disparity because it is all based on local resources that vary widely.

The central government’s share of on and off budget revenue, which even during the post-1978 reform period had been as high as 40 percent of total revenue, had fallen to 20 percent in 1993, but recovered to between 39 and 42 percent during the next three years. At the low point, the central government’s ability to conduct fiscal policy was severely weakened, forcing the government to rely more on monetary policy plus administrative controls. The restoration of tax and fee income back toward the center restored some of the lost fiscal policy capacity, but the tax system was still heavily reliant on informal administrative mechanisms that lacked transparency.

Reforms in the Financial Sector

As budget revenue declined as a share of GDP in the 1980s, the government shifted a great part of its fiscal responsibilities, such as the provision of investment funds and SOE operating funds, to the financial sector. Previously the state banks were used mainly as bookkeepers for the government. In 1985, the fiscal allotments of funds to the SOEs and to investment projects were all converted to bank credits. Meanwhile, local governments and SOEs were granted autonomy to borrow from the state banks. As a result, the debt-asset ratio of the SOEs increased steadily, rising to

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19 There is another category of government revenue in the PRC, the “extra-budgetary revenue”. It is actually included in the budget because it is planned and regulated by the central Ministry of Finance. All government agencies are required to annually report this revenue. In 1994, this extra-budgetary revenue amounted to about 30 percent of total budget revenue.
80 percent by 1995, among the highest ratios in the world. Consequently, banks suffered the growing problem of bad loans or nonperforming assets. By the mid-1990s nonperforming assets were estimated by official sources to be about 30 percent of all state bank credit. By 1994, the capital adequacy ratio of the four largest state-owned commercial banks had fallen to between 4.3 and 7.4 percent, below the Basle standard (see Lardy 1998). In 1993, three new “policy banks” were established to carry out part of the “policy lending” in the areas of long-term development loans, agricultural development credit, and foreign trade credit. Policy lending to SOEs, however, remains the business of the major specialized state banks. The commercialization of state banks has been a major objective of banking sector reform and banks have become more profit-oriented and more reluctant to continue making loans to loss-making and heavily indebted SOEs.

Credit quotas, or credit plans, still play an important role in monetary management. Interest rates for controlled loans (of credit quotas) are still centrally fixed at artificially low levels because of pressure from SOE borrowers, although higher black market rates prevail for many “re-lending” activities. In 1996, a national unified interbank lending market was opened officially as a parallel money market in which interest rates were virtually liberalized.

More than 250 foreign banks and 140 foreign nonbank financial institutions (including insurance companies) have opened their representative offices and branches in the PRC (mostly in foreign currency banking). The development of nonstate banks, however, has lagged behind the development of nonstate business in the real sectors. Only one nationwide private corporate bank (Minsheng Bank) and three urban cooperative shareholding banks existed at the beginning of 1996. More urban cooperative banks are going to be established, but they are generally very much under the control of local governments.

The nonbank financial institutions, including a variety of trust and investment corporations, finance companies, leasing companies, insurance companies, and securities dealers, now play increasing roles in the financial market. Of about 400 trust and investment corporations, however, 185 are actually associated with state commercial banks working under rather soft constraints. Such an ownership structure has contributed to the highly speculative and volatile nature of the capital market.

There are at present two stock exchanges, in Shanghai and Shenzhen respectively, and eleven futures markets nationwide, with very limited trading. The capital market, however, has suffered from distortions in pricing, limited access, and extreme volatility in its early stages of development. The enforcement of regulations in the capital market is either weak or mismanaged through bureaucratic interference.

This recitation of the problems facing the PRC’s financial system could lead one to the conclusion that the PRC will some day face a financial crisis not unlike the one that hit so many other Asian economies in 1997. Certainly the PRC’s financial system is not inherently stronger than that of say Indonesia, the Republic of Korea,
or Thailand. And the PRC’s financial system may yet become a serious drag on the overall performance of the economy. Japan’s banking crisis, however, is probably a better indication of what might happen in the PRC than is the recent experience of Indonesia or Korea. The weakness of the PRC’s financial system could lead to a general drying up of credit, with banks reluctant to lend because of fear that loans would turn bad and jeopardize their survival.

To get a full-fledged crisis of the 1997 Asian magnitude, however, several other ingredients would have to be present, which as of the end of 1998 were noticeably absent in the Chinese case. The PRC’s banks and enterprises did not have large amounts of foreign debt and, what they did have was mostly long-term. The PRC, as already noted, also had very large foreign exchange reserves and a sizeable current account surplus. Neither debtors nor creditors had to worry about whether the PRC would have the foreign exchange to pay back its loans without having to sharply devalue the exchange rate. Finally, the PRC had controls on the movement of capital in and out of the country. These flows did not prevent a sizeable outflow in 1998, but they did slow it down to where there was little danger of a financial panic.\footnote{Despite a large inflow of foreign direct investment in 1998 and a large current account deficit, the PRC’s foreign exchange reserves at the end of 1998 were no higher than they had been at the beginning of the year. The reason has to be that there were very large unrecorded outflows of capital from the PRC.}

The absence of a financial panic, therefore, is not evidence that the PRC’s financial system is strong. The PRC’s financial reform has just started and has a long way to go. The underdeveloped financial infrastructure will remain as one of the major bottlenecks for improvement of the allocative efficiency of the economy as a whole over the next decade.

**Economic Cycles and Stabilization Policies**

It is a difficult job for any government to achieve macroeconomic stability in the early stages of both institutional transformation plus rapid economic growth. Unlike many other socialist countries, the PRC suffered serious macroeconomic instability under its previously centrally planned system, notably the economic crises caused by the Great Leap Forward (1959-1961) and the Cultural Revolution (especially in 1967-1968). Similarly, the overheating and structural imbalance in the late 1970s were also caused by the ambitious central plan of modernization, sometimes referred to as the “import-led Great Leap Forward”. While GDP growth has never been negative over the past 17 years, three economic cycles can nonetheless be observed during the period of institutional reforms: 1984-1986, 1987-1991, and 1992-1996. Each time, the overexpansion of investment led to bouts of overheating and subsequent retrenchment.
Macro instability since the early 1980s has been increasingly caused by the ineffectiveness of macroeconomic policies rather than by wrong policies. Being aware of the possibility of overheating, the central government in most years since 1980 has tried to keep the orientation of its macroeconomic policy toward demand control rather than expansion. This control, however, has proved to be increasingly difficult to maintain.

Due to the decentralization of decision making described above, local governments at various levels were granted both the fiscal resources and the administrative authority to approve investment projects with fewer and fewer limitations. State enterprises were also allowed to make their own decisions on expansion. Meanwhile there was a lack of “ownership control” in the public sector with respect to expenditures because the state ownership of capital assets of SOEs remained in general unchanged. Under such a system, the so-called “soft budget constraint” resulted in macroeconomic expansion as well as microeconomic inefficiency. In each economic cycle, macro overheating was caused by a surge of fixed investment in the state sector (Figure 4).

Financial sector reform as well led to a more decentralized system with increasing autonomy for banks and nonbank financial institutions. From time to time, the central monetary authority tried to reform monetary policy by relaxing the direct quantitative controls on credit and introducing market policy instruments. Due to the special relationship between local governments and SOEs on one hand, and between local governments and local branches of state banks on the other, monetary operations typically involved locally initiated monetary expansion. The local branches of banks cooperated or were forced to cooperate with local governments and SOEs to support their expansion programs by expanding credit. The increase in bank credit in turn forced the central authority to increase the supply of base money to avoid cash shortage crises. Such locally initiated monetary expansion can be partially verified by the observation that the actual money supply was higher than the planned money supply particularly during much of the 1990s.

The dual track therefore has severely limited the effectiveness of any single macroeconomic policy. The adjustment of interest rates, for instance, has effects on decisions of nonstate companies, but still remains basically ineffective for a state sector that still operates under a soft budget constraint. As the monetary situation has periodically spun out of control, the central authority has been forced to turn back to conventional administrative controls in dealing with the state sector, such as credit ceilings, cutting investment projects by administrative order, and recentralization of some decision making over project approval.

\[21\] While people usually praise the concept of decentralization, it is crucial in analyses of the Chinese economy to understand the difference between decentralization through privatization and decentralization without change of ownership, both of which occurred in the PRC.
The major questions for the future, however, are not whether the PRC can continue to keep inflation and unemployment at acceptable levels. Prices will be held down either by monetary and fiscal policy or by reversion to direct administrative intervention as has been the case to date. The unemployed will either be absorbed by high growth or will be pushed back on the rural communities from where they came. The real issue for the future is whether the PRC can bring the dual track system to an end and complete the move to a market system where administrative intervention, with its negative impact on economic efficiency, can be avoided. If this transition is not completed, Chinese development will continue to alternate between periods of high GDP growth and accelerating prices followed by retrenchment, slower GDP growth, higher unemployment, and falling prices.

The central question is whether the PRC will complete the process of building a market economy, as this section of the essay has made clear, and what will happen to the state-owned enterprises. Related questions are whether the PRC will succeed in creating a modern financial system and a national social welfare system. Many of the other reforms required by a market system are already in place and only marginal improvements remain undone. Prices, for example, largely have been freed up to seek
world levels. Foreign exchange is readily available for most current account and some capital account purposes. The central government’s monopoly of foreign trade is a thing of the past. And over half of industrial output, all of agriculture, and a large share of services, are owned by individuals or groups that behave much like the private sector, whether they are formally part of it or not.

Many major changes in policies and institutions were initiated in the 1980s. These formal changes triggered a series of further moves away from the command system even when parts of the government bureaucracy resisted such moves. State-set prices, for example, could not be maintained because producers and other sellers had a powerful incentive to evade price controls. Something similar appears to be happening in the 1990s with interest rates. Import controls also proved difficult to enforce, particularly once foreign exchange became readily available. Much of the move to a market system, therefore, occurred more or less automatically once certain preconditions were in place. Even the state-owned enterprise problem has been ameliorated by the steadily rising share of nonstate enterprises. And many “back door” forms of privatization have occurred as state entities have transformed public property into private assets through joint ventures with foreign firms or by subcontracting with township and village enterprises.

But not all of the missing elements of a market system can be created by individual and firm-based changes pushing against a resisting but weak government bureaucracy. One cannot create a legal system where the rule of law prevails by this method, for example. Companies, foreign and domestic, can push the government to write and pass commercial laws, but the real issue is whether the government will create a transparent and equitable means of enforcing those laws. Nor will automatic processes create a national welfare system or privatization or corporatization of the largest state enterprises. These changes require the government’s capacity to make decisive changes, often in the face of considerable resistance from the politically powerful.

The PRC in the 1980s and early 1990s achieved considerable success in overcoming the resistance to reform by government bureaucrats. Those who argued that a piecemeal approach to reform would ultimately receive the same fate as similar measures in Eastern Europe prior to 1989 proved to be wrong. The government bureaucracy in the PRC was not able to hold onto much of its power, particularly in the countryside, but also among many urban and suburban industrial sectors. But the PRC in the early reform period had a strong leadership that was not dependent on the government bureaucracy for its political influence. The current collective leadership in the PRC is not in a similar position, nor is there any reason to expect that the PRC will once again acquire within the next decade or so, the kind of decisive leadership that existed in the 1980s. The political foundations for that kind of leadership, for better or for worse, no longer exist.
Economic Development and Human Welfare in the PRC: Who has Benefited from Growth and Reform?

Earlier parts of this essay analyzed various features of the PRC’s growth and reform efforts over the past two decades. In this section, we examine the distribution of the economic gains made over this period and some of the choices the PRC confronts in balancing continued growth and reform with equitable sharing of the benefits of development.

Changes in Rural Income and Income Distribution

In broad terms, there is no question that most Chinese rural residents have benefited enormously in the past two decades. The agricultural reforms launched in the late 1970s spurred an immediate jump in allocative efficiency and dramatically boosted rural incomes, which had remained virtually stagnant in the 1960s and 1970s. In official terms, real average net per capita income among rural households rose by an average of over 13 percent per year from 1978 to 1985 (see Table 5), even though official data understate actual income levels by excluding or undervaluing important sources of income.22 By the mid-1980s, however, the focus of reform had shifted to industry. Just as productivity gains in agriculture slowed, price reforms raised the cost of manufactured goods and reduced agriculture’s terms of trade. Rural surplus labor was also aggravated by rapid expansion of the rural working-age population, which began to take advantage of relaxing government control over

<table>
<thead>
<tr>
<th>Year</th>
<th>Urban Areas</th>
<th>Rural Areas</th>
<th>Urban:Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nominal</td>
<td>1978 yuan</td>
<td>Nominal</td>
</tr>
<tr>
<td>1957</td>
<td>254</td>
<td>n/a</td>
<td>73.0</td>
</tr>
<tr>
<td>1978</td>
<td>316</td>
<td>316</td>
<td>134</td>
</tr>
<tr>
<td>1980</td>
<td>439</td>
<td>401</td>
<td>191</td>
</tr>
<tr>
<td>1985</td>
<td>685</td>
<td>510</td>
<td>398</td>
</tr>
<tr>
<td>1990</td>
<td>1,387</td>
<td>625</td>
<td>686</td>
</tr>
<tr>
<td>1996</td>
<td>4,377</td>
<td>936</td>
<td>1,926</td>
</tr>
</tbody>
</table>

Note: Figures are for average per capita net income for registered urban and rural residents. Nominal figures are deflated by the urban/rural consumer price index.

22 One recent study using 1988 household survey data estimated that omitted sources of income, including subsidies, imputed value of housing, and output for self-consumption, added an additional two fifths to official per capita rural income levels (Khan et al. 1993, 30-3).
interregional movements and rising urban labor demand, and which migrated into cities in rapidly increasing numbers. Growth in rural incomes slowed considerably to less than 1.0 percent per year on average between 1985 and 1990. In the 1990s, particularly after 1993, increases in agricultural production and jobs in rural industry again fueled rural income growth, which averaged an annual 6.7 percent from 1990 to 1996.

The jump in rural incomes in the early reform years appears to have been accompanied by a decline in rural income inequality, primarily due to the effects of distributing collectivized land on a per capita basis and allowing poorer regions to specialize in profitable nongrain activities. The World Bank estimates that as a result of these influences the Gini coefficient for rural income fell from 0.28 in 1979 to 0.22 in 1982, a very low level of inequality (see Table 6). By 1982-1983, however, the equalizing impact of reform had worn off and income inequality began to rise. The World Bank estimated the Gini coefficient at 0.31 for 1986, while researchers using household survey data calculated coefficients of 0.34 for 1988 and a much higher 0.42 for 1995. In comparative terms, these estimates suggest that a considerable shift has occurred in the PRC from low to moderate rural income inequality. Moreover, as the figures in Table 7 reveal, rural inequality varies enormously from province to province.

From analysis of the 1988 data above, the most important variable driving income inequality across rural households appears to be location. As discussed earlier, the gains from recent growth have been concentrated in the highly productive and outward-oriented coastal provinces from Guangdong to Shandong, where rural industry has flourished through the development of TVEs. In such areas, rural incomes have risen far more rapidly than in many of the upland areas in the northwest, northeast, and southwest, where productivity gains have been more difficult to sustain and rural industry has developed more slowly (see Table 7). In 1988, when the typical rural household earned 3,800 yuan, residing in Guangdong or Zhejiang added an estimated 2,300 yuan or 909 yuan, respectively, to family income, holding constant household-related factors, whereas residing in Heilongjiang or Shaanxi reduced income by 1,700 yuan or 765 yuan (see Khan 1993,106). Using cruder official data, average per capita rural income in the richest province in 1980 was less than twice that of the poorest, but by 1996 it was over three times higher. Although rural wages

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23 Officials and researchers commonly estimate that by 1998, there were at least 100-120 million rural residents employed on a permanent or semipermanent basis in urban areas.

24 The Gini coefficient is a common measure of inequality ranging from zero, or perfect equality, to one, perfect inequality. The PRC’s Gini coefficients have been revised several times by the World Bank analysts, as explained in World Bank (1985, 29) and Khan et al. (1993, 60-1).

25 Even within provinces, rural income varies considerably from county to county (see Cook 1996), whose analysis was based on county-level data from Shandong.
are sensitive to personal characteristics, institutional forces also affect income levels. In poorer regions, where wages appear to be higher than the supply price of labor, and thus contain a degree of economic rent, lowering industrial wages would likely help to reduce intraregional rural inequality and might allow poorer areas to compete more successfully with wealthier areas.

Table 6: Comparison of Income Inequality—The PRC and Other Developing Countries

<table>
<thead>
<tr>
<th>Country, Year</th>
<th>Rural</th>
<th>Urban</th>
<th>Gini Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Poorest 40%</td>
<td>Richest 20%</td>
<td>Poorest 40%</td>
</tr>
<tr>
<td>PRC, 1979-80</td>
<td>20.1</td>
<td>39.4</td>
<td>30.0</td>
</tr>
<tr>
<td>1982&lt;sup&gt;a&lt;/sup&gt;</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>1988&lt;sup&gt;b&lt;/sup&gt;</td>
<td>20.0</td>
<td>41.0</td>
<td>26.0</td>
</tr>
<tr>
<td>1995&lt;sup&gt;b&lt;/sup&gt;</td>
<td>16.4</td>
<td>48.9</td>
<td>24.3</td>
</tr>
<tr>
<td>Bangladesh, 1966-67</td>
<td>19.9</td>
<td>41.7</td>
<td>17.1</td>
</tr>
<tr>
<td>Brazil, 1960</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Chile, 1958</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Colombia, 1964</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>El Salvador, 1965</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>India, 1975-76</td>
<td>20.2</td>
<td>42.4</td>
<td>16.9</td>
</tr>
<tr>
<td>Indonesia, 1976</td>
<td>16.4</td>
<td>46.0</td>
<td>16.0</td>
</tr>
<tr>
<td>Iraq, 1956</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Ivory Coast, 1959</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Jamaica, 1958</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Malaysia, 1970</td>
<td>12.2</td>
<td>54.8</td>
<td>11.2</td>
</tr>
<tr>
<td>Mexico, 1963</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Pakistan, 1970-71</td>
<td>21.9</td>
<td>38.8</td>
<td>19.1</td>
</tr>
<tr>
<td>Peru, 1961</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Philippines, 1971</td>
<td>7.3</td>
<td>46.7</td>
<td>13.7</td>
</tr>
<tr>
<td>Sri Lanka, 1969-70</td>
<td>18.6</td>
<td>42.5</td>
<td>16.3</td>
</tr>
<tr>
<td>Thailand, 1975-76</td>
<td>17.8</td>
<td>46.5</td>
<td>17.5</td>
</tr>
<tr>
<td>Zambia, 1959</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

<sup>a</sup> Estimated by the World Bank on the basis of official data that exclude the value of housing, certain subsidies, and income in kind.

<sup>b</sup> Estimated by researchers using independent household survey data that include the value of housing, various subsidies, and production for self-consumption (valued at market prices).

Sources: Griffin and Zhao (1993, 8); Khan et al. (1993, 40, 44, 60-1); World Bank (1983, 88-9, 92); Fields (1980, 65-6); Khan and Riskin (1997, 237-48).

<sup>26</sup>Knight and Song (1993) found that individual factors also help determine access to wage employment, with the likelihood of obtaining an industrial job rising with being male, a Party member, and well-educated.
Table 7: Comparison of Provincial Income Inequality

<table>
<thead>
<tr>
<th>Province</th>
<th>Nominal Per Capita Income&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Real Average Annual Income Growth 1980-96 (%)&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Gini Coefficient&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shandong</td>
<td>194</td>
<td>631</td>
<td>2086</td>
</tr>
<tr>
<td>Jiangsu</td>
<td>218</td>
<td>876</td>
<td>3029</td>
</tr>
<tr>
<td>Zhejiang</td>
<td>219</td>
<td>1011</td>
<td>3463</td>
</tr>
<tr>
<td>Fujian</td>
<td>172</td>
<td>697</td>
<td>2492</td>
</tr>
<tr>
<td>Guangdong</td>
<td>274</td>
<td>955</td>
<td>3183</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liaoning</td>
<td>273</td>
<td>740</td>
<td>2150</td>
</tr>
<tr>
<td>Jilin</td>
<td>236</td>
<td>624</td>
<td>2126</td>
</tr>
<tr>
<td>Heilongjiang</td>
<td>205</td>
<td>535</td>
<td>2182</td>
</tr>
<tr>
<td>Anhui</td>
<td>185</td>
<td>516</td>
<td>1608</td>
</tr>
<tr>
<td>Henan</td>
<td>161</td>
<td>457</td>
<td>1579</td>
</tr>
<tr>
<td>Hubei</td>
<td>170</td>
<td>572</td>
<td>1864</td>
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<tr>
<td>Hunan</td>
<td>220</td>
<td>558</td>
<td>1792</td>
</tr>
<tr>
<td>Sichuan</td>
<td>188</td>
<td>494</td>
<td>1453</td>
</tr>
<tr>
<td>Shaanxi</td>
<td>143</td>
<td>434</td>
<td>1165</td>
</tr>
<tr>
<td>Gansu</td>
<td>153</td>
<td>366</td>
<td>1101</td>
</tr>
<tr>
<td>Ningxia</td>
<td>178</td>
<td>522</td>
<td>1398</td>
</tr>
<tr>
<td>Mean</td>
<td>199</td>
<td>624</td>
<td>2042</td>
</tr>
<tr>
<td>Coef. of Var.</td>
<td>0.19</td>
<td>0.29</td>
<td>0.33</td>
</tr>
<tr>
<td>High/Low</td>
<td>1.92</td>
<td>2.76</td>
<td>3.15</td>
</tr>
</tbody>
</table>

<sup>a</sup> Figures based on official data and represent net rural income and urban income available for living expenses.

<sup>b</sup> Each nominal income figure was deflated by the province-specific rural/urban consumer price index.

<sup>c</sup> Calculated by Khan et al. (1993) on the basis of independent household survey data.

Sources: SSB China Statistical Yearbook (1997); provincial statistical yearbooks (various years); and Khan et al. (1993, 53).

Changes in Urban Income and Income Distribution

Urban residents have also been obvious beneficiaries of recent economic reform and growth. Beginning initially in the late 1970s and particularly after urban reforms led to swift growth in urban industry and services in the mid-1980s, urban wages and household incomes rose rapidly. Between 1978 and 1996, the average real urban wage (outside the private sector) more than doubled while average per capita urban income increased at a real average annual rate of 6.2 percent (Table 5). However, as with official rural income data, these figures understate real income levels by excluding certain sources of income as the value of housing, income in kind, and numerous subsidies.<sup>27</sup>

<sup>27</sup> One study found that these benefits added 55% to the State Statistical Bureau’s income figures for 1988 (see Khan et al. 1993). Urban reforms requiring residents to pay for more of their housing, health care, and other services should reduce their implicit income levels.
Like rural income distribution, the available evidence suggests that urban income inequality has increased significantly since the early reform period. As shown in Table 6, the share of total income received by the poorest urban residents declined from 1988 to 1995 as the share of the wealthiest rose. Estimated Gini coefficients, although calculated on the basis of different data, indicate a sharp upward climb from 0.16 in 1980 to 0.33 in 1995. In the developing world as a whole, the PRC’s urban inequality is not extraordinarily high, but the pace of rising inequality is somewhat alarming. The survey data from which these inequality measures were estimated also include only those households registered by the government as urban. They exclude incomes of the growing number of rural workers employed in cities who officially remain “rural” residents. Since these laborers are usually employed in low-wage construction, industrial, and service jobs, exclusion of their incomes almost certainly leads to understated income inequality. Moreover, the province-specific Gini coefficients estimated for 1988 (Table 7) suggest that, like rural incomes, distribution of urban incomes varies considerably among provinces.

The increase in urban inequality partly stems from widening disparities across different parts of the PRC. Like the rural economy, income growth in urban centers has generally been fastest in the dynamic coastal provinces of the PRC, which enjoy easier access to foreign investment, more sophisticated populations, and especially rapidly growing urban industry and services. Even accounting for relative price increases, interregional urban income differentials widened substantially between 1980 and 1996 (see Table 7). Within urban areas, the emergence of a more market-oriented labor system has also spurred rising income inequality in three main ways. First, liberalization of formal labor and wage controls, together with increasing layoffs among debt-ridden SOEs has broadened the income range of state-sector workers. Second, the rising urban employment share of non-SOEs, especially privately-owned businesses, has created a dynamic urban sector characterized by a broad mix of very high and low wage jobs. Third, the enormous influx of rural job-seeking has increased the number of workers at the bottom of the urban pay scale, even as average urban wages continue to climb.

A critical determinant of the future welfare of urban residents will be what happens to overall GDP and employment growth in the next few years. As of mid-1998, the combination of the Asian crisis and SOEs and other domestic reforms appeared to be slowing the previously very swift pace of economic and job growth. Urban unemployment rose gradually throughout the 1990s, but jumped to alarming levels in 1997, as a result of SOE reforms in particular. In official terms, which vastly understate actual figures, the number of urban unemployed rose from 3.5 million in 1991

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28 Official SSB figures suggest that the SOE share of urban employment declined from about 75 to 56 percent from 1980 to 1996, as the private sector share rose from virtually nil to 12 percent (see SSB China Statistical Yearbook 1997, 96-7). However, as these figures understate actual private employment, the fall in the SOE share is greater. For an estimate of urban private employment growth, see Sabin (1994).
to 5.5 million in 1996, and stood at 8 million in October 1997. Many local governments have sought to create jobs for laid-off urban residents by returning rural migrant workers back to the countryside, an unfortunate tactic reminiscent of the administrative controls typical of the PRC’s prereform command economy. In the spring of 1998, threats of urban unrest prompted the central government to issue a circular emphasizing the importance of reemployment programs and plans to encourage further development of the private service sector, a policy which may ease the shift of surplus workers out of state-owned manufacturing enterprises (China Daily 1998).

In broad terms, employment growth over the next decade will depend upon job growth in the urban and rural economies as well as the subsectors within them, as detailed in Table 8. If employment growth slows substantially in the two most dynamic sectors—the urban nonstate sector and the rural off-farm sector—there will be insufficient job growth for both urban workers and rural surplus labor. If, however, employment growth in these sectors remains close to 1990-96 levels, and what now comprises the state sector grows at even a very modest rate, then job growth will outpace the increase in new job-seekers and a large number of rural workers will be able to shift out of agriculture and into the more modern urban and industrial sectors without threatening the job opportunities of the urban workforce.

Relative and Absolute Poverty

In view of the above discussion, it is not surprising that available estimates of the PRC’s income distribution across the country as a whole indicate a striking rise in inequality during the reform years. As shown in Table 8, Gini coefficients for overall income inequality increased from a relatively low 0.33 in 1979-80 to 0.38 in 1988 (see Table 6), and then to 0.45 in 1995, making the PRC’s income distribution one of the most unequal in Asia.

Growing interregional disparities between coastal and interior regions and between urban and rural areas are a major force in this shift. Both are long-standing inequalities influenced by development patterns as well as by deliberate policies. Before the reform period, the government essentially institutionalized urban-to-rural income disparities by maintaining low agricultural prices and restricting rural-to-urban migration. More recently, income growth has generally been swiftest in urban areas, while market-oriented reforms and the promotion of foreign trade and investment

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29 In theory, this trend could be demonstrated with Gini coefficients calculated from province-based average per capita income data for selected years during the reform period. In practice, however, aggregation at the provincial level necessarily reduces much of the true variation in household incomes across the PRC. The resulting Gini coefficients, while rising after the mid-1980s and especially after 1990, therefore tend to be quite low and do not provide a very meaningful measure of rising income inequality in recent years.
Table 8: Labor Supply and Employment Trends

<table>
<thead>
<tr>
<th>Figures in millions or percent</th>
<th>1980</th>
<th>1990</th>
<th>1996</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Age Population</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total persons</td>
<td>n/a</td>
<td>754.5</td>
<td>822.4</td>
<td>979.0</td>
<td>979.0</td>
</tr>
<tr>
<td>Employment ratio</td>
<td>n/a</td>
<td>84.7</td>
<td>83.7</td>
<td>85.5</td>
<td>76.6</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>423.6</td>
<td>639.1</td>
<td>688.5</td>
<td>837.4</td>
<td>749.8</td>
</tr>
<tr>
<td>Urban</td>
<td>96.8</td>
<td>157.8</td>
<td>191.8</td>
<td>302.6</td>
<td>253.1</td>
</tr>
<tr>
<td>State sector</td>
<td>72.2</td>
<td>95.5</td>
<td>106.5</td>
<td>125.2</td>
<td>105.4</td>
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<tr>
<td>Nonstate sector</td>
<td>24.6</td>
<td>62.3</td>
<td>85.3</td>
<td>177.4</td>
<td>147.7</td>
</tr>
<tr>
<td>Rural</td>
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<td>481.3</td>
<td>496.7</td>
<td>534.9</td>
<td>496.7</td>
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<tr>
<td>Agriculture</td>
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<td>341.8</td>
<td>329.0</td>
<td>277.1</td>
<td>275.4</td>
</tr>
<tr>
<td>Off-farm</td>
<td>20.3</td>
<td>139.5</td>
<td>167.7</td>
<td>257.8</td>
<td>221.3</td>
</tr>
</tbody>
</table>

# Employment Growth (%)

<table>
<thead>
<tr>
<th>(Average Annual)</th>
<th>1980-90</th>
<th>1990-96</th>
<th>1996-2010</th>
<th>(1)</th>
<th>(2)</th>
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<tr>
<td>Total</td>
<td>4.20</td>
<td>1.25</td>
<td>(1.41)</td>
<td>(0.61)</td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>5.01</td>
<td>3.31</td>
<td>3.31</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>State sector</td>
<td>2.84</td>
<td>1.84</td>
<td>(1.16)</td>
<td>(-0.10)</td>
<td></td>
</tr>
<tr>
<td>Nonstate sector</td>
<td>9.74</td>
<td>5.37</td>
<td>5.37</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>3.94</td>
<td>0.53</td>
<td>0.53</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Agriculture</td>
<td>1.09</td>
<td>-0.63</td>
<td>(-1.22)</td>
<td>(-1.26)</td>
<td></td>
</tr>
<tr>
<td>Off-farm</td>
<td>21.26</td>
<td>3.12</td>
<td>3.12</td>
<td>2.00</td>
<td></td>
</tr>
</tbody>
</table>

*The working-age population in 2010 is estimated using 1995 census data, adjusted for attrition (based on 1990-95 attrition). Estimated employment is calculated from the growth rates at the bottom of the table, where the rates in ( ) result from the assumed rates outside ( ). Case (1) assumes the same average annual growth rates in the overall urban and nonstate sectors and in the overall rural and off-farm sectors, as from 1990-96. Case (2) assumes lower growth rates.

* Figures take persons aged 15-64 as the working age population rather than the narrow official Chinese definition (16-54 for women and 16-59 for men), because many urban Chinese do not in fact retire at the official age and most rural Chinese work longer if they are able.

* Rather than calculate the participation rate (the ratio of employed plus unemployed persons to total working age persons), due to inadequate data, the employment ratio (the ratio of employed persons to total working age population) is provided. Due to large numbers of rural underemployed workers, this ratio is also deceptive, but it does convey a sense of the changes over time in the proportion of working age persons who are at least casually employed.

* State and nonstate sector agricultural workers are counted here as rural agricultural workers.

have favored the natural attributes of coastal areas. As a result, regional disparities are now profound, with incomes in the richest provinces 2-3 times those in the poorest. Similarly, after first shrinking in the late 1970s and early 1980s, and despite significant rural-to-urban migration and large increases in rural incomes in the mid-1990s, the urban-to-rural income gap has steadily widened since the mid-1980s. Average (net) urban incomes were nearly 2.3 times rural incomes at the end of 1996, a greater gap than in most developing countries. The continued subsidization of services, especially housing, which are denied nonofficial urban residents, reinforces these income differentials, as underscored by the finding of a recent study that urban housing subsidies and the rental value of owned urban housing are the greatest sources of overall income inequality in the PRC (see Khan and Riskin 1998).

Continued interregional migration, especially rural-to-urban flows, will be extremely important in helping keep regional disparities at a minimum. Although local governments cannot really control these flows without a major change in policy, both the central and local governments have tended to view the influx of rural migrants with alarm rather than seeking to ease their way into the urban economy. It is true that the magnitude and pace of this population shift strain urban resources, with enormous pressure on urban housing, transport, medical care, and schools, though lack of formal urban status means that rural migrants are often unable to access social services. On the whole, however, there is no doubt that rural-to-urban migration has benefited not just rural workers and urban employers and consumers, but also the PRC’s broader rural society. Rural out-migration has eased underemployment in villages and remittances flowing in the opposite direction have provided a valuable source of investment funds and played a key role in alleviating rural poverty.

To truly bridge the urban-rural divide, Chinese leaders need to allow the absorption of rural workers and their families into the current urban social service and welfare system. Despite reforms in the provision of urban services such as housing and health care, registered urban workers continue to enjoy preferential access to many urban services through their work units. As a result, rural migrants are still frequently housed in makeshift shacks and lack access to schools and health facilities. A critical test of urban reform will therefore be completing the delinking of such services from formal residence status and work unit connections to reduce the gap in living standards between registered urban families and rural migrants. Continuing to raise the cost of housing and other services to urban residents should be a key element of this process, both for equity reasons and to avoid bankrupting city governments, even though this is unpopular and therefore politically risky.

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30 A recent study that made use of 1952-93 data found that average provincial (rural and urban) per capita incomes converged from 1978 to 1990 and then began to diverge, driven primarily by coastal versus inland income disparities (see Jian et al. 1996).

31 This is clear from the income gaps ranging from 1.5 to 2.4 provided in Zhao (1993, 83).
Above and beyond the issue of relative poverty is the problem of absolute poverty—those Chinese who have yet to benefit in any meaningful way from recent reform and growth. Though measures of poverty incidence vary, there is broad agreement that poverty reduction in the PRC since the late 1970s has been a clear success that sharply contrasts with the experience of many transition economies. The best poverty estimates appear to be those of the World Bank,\textsuperscript{32} which previously used Chinese standards of welfare and entitlement (based on caloric intake and nonfood subsistence) to estimate that the total number of Chinese living in poverty declined dramatically from 270 million (28 percent of the population) in 1978 to 97 million (9 percent) in 1985.\textsuperscript{33} Recently, however, the Bank revised its estimates on the basis of an international poverty threshold which is about two thirds higher than the Chinese-defined poverty line.\textsuperscript{34} According to this latest definition, the number of absolute poor in the PRC fell over the same period from about 580 million (nearly 60 percent of the population) to just under 450 million (just over 40 percent).\textsuperscript{35}

Regardless of the precise numbers, the major force behind the decline in poverty was broad participation in reform-driven agricultural growth. But slower growth in upland areas in the second half of the 1980s essentially stymied further progress until the early 1990s, despite the establishment of a broad poverty alleviation program in the mid-1980s. Since then, the absolute poor have typically been people living in remote villages and towns in resource-deficient rural regions, where even the most basic needs of individuals and families are unmet. In large part, these communities have remained mired in poverty because increases in funding for education and health since the late 1970s have tended to benefit the urban population and middle and upper income rural inhabitants rather than the poorest areas. Although poverty remains principally a rural phenomenon, the number of urban poor has been on the rise in recent years, mainly due to rising unemployment and more costly access to urban services.

Rising domestic and international concern prompted the Chinese government in 1994 to launch a targeted intervention program—widely known as the 8-7 Plan—to completely eliminate poverty in the PRC by the year 2000. At the core of the plan is increased government funding to develop small-scale and labor-intensive economic activities, improve access to such basic needs as adequate drinking water, primary education, and health care, reduce the isolation of poor communities by extending

\textsuperscript{32}This is mainly because SSB poverty lines for the 1980s do not adequately adjust for price changes. See World Bank (1992) for a detailed explanation.

\textsuperscript{33}See World Bank (1992), which contains the Bank’s earlier poverty figures and analysis of the important factors affecting Chinese poverty.

\textsuperscript{34}The international standard is based on $1 per person per day, using the purchasing power parity method of exchanging local currencies for dollars. In comparison, the lower Chinese standard works out to be about $0.6 per person per day (World Bank 1996).

\textsuperscript{35}In the case of the original estimate, approximately one million urban Chinese comprising less than one percent of the urban population still lived in poverty in 1985.
roads and electricity, assist rural laborers to migrate to urban areas, and help households in the most remote and resource-poor regions to resettle in more productive areas. Using the Chinese-defined poverty line, the latest available figures suggest that the 8-7 program helped reduce the number of absolute poor to about 65 million in 1996, of which between 11 and 12 million were urban residents. Using the higher World Bank standard, the figure stood at about 350 million.\textsuperscript{36} Regardless of the precise figure, however, improving the living standard of the PRC’s absolute poor is essential to achieving a more equitable distribution of the gains of economic reform and growth.

**Continued Growth with Equity**

In light of the PRC’s experience during the reform era and likely future trends, how can we expect the gains of future economic growth to be distributed? To the extent that the PRC’s leaders actively seek to share these gains as broadly as possible, what are the major challenges they will face? The discussion above points to several key issues that will help determine the answers to these questions.

One important issue will be the way in which future reforms are carried out. Real reform of SOEs, combined with the elimination of all permanent jobs, could result in even more substantial levels of urban unemployment and an enormous increase in the number of urban poor. This threat could continue to delay such reforms. If they are carried out, however, the resulting distributive inequalities will be minimized to the extent that an effective social welfare net is in place to assist those workers and families hurt in the process. Central and local governments have been scrambling in recent years to establish just such a welfare net, but thus far it remains incomplete just about everywhere in the PRC.

The PRC also faces a complex set of problems revolving around wide and growing coastal versus interior and urban versus rural inequalities. A great deal of attention has been focused on the former issue in particular. In response, the PRC’s leaders might be tempted to try to divert major resources away from the coastal provinces toward slower-growing inland regions, as they did in the 1960s and 1970s. Barring a major change in leadership and development strategy, however, this is unlikely to happen for two reasons. First, the power of the central government to control local investment is far more limited now than even a decade ago. Second, even more conservative officials recognize that restricting investment in the most vibrant and efficient part of the country would significantly hinder overall economic development in the PRC. A more productive approach would be to stress gradual but steady improvement of human and physical capital in interior regions, through in-  

\textsuperscript{36}The official estimates were provided by researchers at the Institute of Population Studies at Beijing University. The latest Bank estimate is from World Bank (1996).
vestment in education and urban infrastructure, including transportation. Such an approach would enhance the long-term ability of these areas to compete with coastal regions and thus help equalize income distribution throughout the country. At the same time, efforts should be made to create more forward and backward linkages between inland and coastal parts of the country to promote more rapid development of the former.

The most pressing issue arising from interregional disparities is how the PRC will handle the massive rural-to-urban population shift that is already well under way. Government leaders have vacillated on the extent to which they wish to manage the influx of rural migrants into already crowded cities, but in fact, this phenomenon is largely out of their control. Unless officials resort to draconian measures and evict migrants from cities, as they did in the late 1980s, rising numbers of rural laborers will continue to migrate into cities in search of jobs. To achieve distributive and other goals, they should clearly be allowed to do so. This said, migrants and their families will need access to an array of urban social services which they are often now denied due to their official “rural” status. In particular, basic housing, health care, and elementary education must be made available at affordable prices to all residents in order to reduce the inequalities between migrants and registered urban residents. Ideally, this should be done by completely de-linking such services from formal residence status and work units. Whichever way urban services are expanded, however, doing so in a gradual fashion may help discourage even greater numbers of rural migrants from completely overwhelming the PRC’s urban infrastructure.

Finally, how will the PRC deal with the substantial number of people who remain in absolute poverty? Will the government’s efforts to eliminate poverty in the PRC by the year 2000 succeed? At the very least, the new 8-7 Plan gives an unprecedented degree of attention to those whose living standards have yet to be fundamentally improved by the PRC’s rapid economic growth. History suggests that if the government can avoid pouring massive resources into economically nonviable areas, and instead emphasize small-scale, labor-intensive projects, it will have a greater chance of reducing poverty. To the extent people living in the most destitute regions are allowed or even encouraged to move to more productive places, including the small urban areas the government plans to develop, the more likely it is that the twin goals of successfully managing the transition to a modern urban economy and broadly distributing the fruits of growth will be achieved.

**Conclusion**

The PRC’s economy has experienced major successes over the 20 years of the reform period. The economic growth rate has been high and a great majority of the population has shared in the benefits of that growth. Poverty on average and across
most regions of the country has declined markedly. Much of this growth and reduc-
tion in poverty can be directly attributed to the reforms. The reforms led to marked
improvements in productivity and freed up the population to seek better opportunities
throughout the country. For the most part, these reforms have been carried out with-
out sustained macroeconomic imbalances such as high inflation or chronic balance of
payments problems.

But there are major problems remaining, and, if they are not corrected, the
PRC’s 20 years of rapid development could come to an end. The PRC avoided the
Asian financial crisis of 1997 largely because of its strong balance of payments and
foreign exchange reserve positions, but the PRC will not necessarily avoid negative
long-term consequences from weak institutions if the country fails to complete the
reform process. The list of reforms that are only partially completed is a long one.
The reform of the banking system and the state-owned enterprises has only just
begun and commitment to completing the process is not as clear as it might be.
Underlying the problem of specific institutions that need to be changed or created
from scratch is the question of whether the PRC will ever become a nation governed
by the rule of law. The PRC’s step by step approach to reform served it well during
the first two decades of reform and a step by step approach may still be appropriate
in some sectors and with some institutions. But a step by step or gradual approach
can also become an excuse for not completing the job.

Finally, the reforms have also contributed to or created new problems that did
not exist to the same degree in the pre-reform era. The rise in inequality in the PRC is
unusually rapid for such a short period and could threaten the support for reform and
the stability of the system itself if little is done to ameliorate this rise. Large-scale in-
ternal migration within the PRC—rural to urban and rural to rural—is basically a
positive development. Over time it can markedly reduce some of the regional income
disparities that now play such a large role in the PRC’s overall level of inequality.
But a continuation of the current rules whereby new migrants receive few of the
benefits available to long-term urban residents is a formula for instability. Rising
inequality leading to even heavier migration out of the poorer areas into large pock-
ets of poverty in the cities is the likely outcome of present policies. The challenge is
to find ways to reduce the overall level of inequality while improving the lot of those
who do migrate to the cities, without either stimulating even more migration or
slowing growth.
References


*China Price Yearbook*, various years. Beijing.


Educational Development in Asia: Issues in Planning, Policy, and Finance
Keith M. Lewin

Abstract. Most Asian countries have consistently invested heavily in education over the last three decades. Access, participation, and achievement have reached unprecedented levels throughout the region, albeit large differences remain between the more developed and less developed systems. It is widely believed that economic growth in the 21st century will depend on the deployment of the intellectual capital that is developed by effective education systems. The educational challenge this presents is to find ways to continue raising the levels of educational endowments at sustainable levels of cost, especially where austerity creates short-term constraints on public finance. This paper locates recent educational development in an international context and profiles the current status of educational investment in different groups of Asian countries. It explores the issues that are likely to shape how systems will evolve in the first part of the 21st century, and provides analyses of the impact of demographic trends, and of the factors that will influence public financing, patterns of resource allocation, and internal efficiency. The results of these analyses are translated into future scenarios for different groups of countries. The paper concludes with a series of policy-oriented conclusions that identify priorities for governments and donors.

Introduction

This paper has several purposes. First, it seeks to place the development of Asian education systems in an international context to draw attention to some of the similarities and differences between regions and groups of countries in relation to educational indicators. Second, it develops a typology of developing member countries (DMCs) of the Asian Development Bank, which identifies seven groups of states having common features related to educational development. Third, the paper briefly reviews data on access and enrollment growth to complete a picture of the current status of Asian education systems.

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Fourth, the paper draws attention to recent trends and their implications in relation to population growth, public financing, patterns of resource allocation, and internal efficiency. Fifth, it comments on educational development prospects in the different groups of countries, and finally, outlines a range of policy priorities.

**Asian Educational Development in the International Context**

The first part of this analysis offers some insights drawn from international comparisons between DMCs and other countries and regions. The data has many limitations but provides some food for thought on differences in educational status and patterns of educational investment. In brief the data suggest that:

(i) Developed countries typically allocate about 5-6 percent of GNP on education and have done so for extended periods.

(ii) Sub-Saharan Africa (SSA) and the Arab States invest similar amounts in developed countries.

(iii) East and South Asia generally invest less in education as a proportion of GNP (3-5 percent) as do the least developed countries as a group (3 percent). However, these figures do not account for local contributions and private expenditure that may well be greater in Asia than Africa.

(iv) Unit costs as a proportion of GNP per capita tend to be highest in SSA. Latin America and the Caribbean (LAC) and East and South Asia have lower levels as do the developed countries. Asia appears to deliver more education (since it generally has higher enrollment rates) than do other regions at lower relative costs.

(v) Unit costs at the tertiary level as a proportion of GNP per capita are especially high in SSA, possibly as a result of a combination of relatively inefficient institutions, international-level salaries, high proportions of expatriates, and lower GNP per capita. Tertiary unit costs are lowest as a proportion of GNP per capita in developed countries.

(vi) The ratio of unit costs at the tertiary level to those at the school level is lowest in developed countries, suggesting that they may have more even investment patterns that favor tertiary students less relative to school students.
From the UNESCO database (World Education Report 1993/5) it is possible to extract regional averages for groups of countries on key educational development parameters. In Table 1 the countries are divided into three groups: those with GNP per capita less than US$1,000; between US$1,000-5,000; and more than US$5,000. Figures in brackets identify the number of cases used to produce the (arithmetic) averages. Data show that:

(i) Gross enrollment rates (GERs) at the primary level are well below the levels needed to universalize enrollment in many of the poorest countries, and are particularly low in Francophone Africa.\(^1\) Asia has the highest GERs for primary, along with the LAC countries in the poorest group. This is also true for GERs at the secondary and tertiary levels. GERs for primary are related to GNP per capita as are those for secondary; higher levels of GNP per capita are associated with higher GERs.

(ii) The Asian Newly Industrialized Countries (NICs)\(^2\) do not appear to have especially high enrollment ratios at secondary and higher levels (however enrollment ratios at higher levels may be underestimated where large numbers are studying abroad as, for example, in Malaysia).

(iii) The most striking differences in GERs relate to the secondary level. As many poorer countries achieve high primary GERs, it is the gap in secondary GERs that differentiates richer from poorer countries.

(iv) Among the poorest countries, Anglophone and Lusophone Africa spend the greatest proportions of GNP on education, while poor Asian countries allocate less than the average. Middle-income countries have average levels of educational investment as a percent of GNP similar to those of rich countries. The richest countries allocate about 33 percent more on average to education as a percentage of GNP than do the poorest.

(v) The largest proportions of government expenditure on education are allocated to education in Francophone African countries (18 percent). Some of the lowest proportions are in poor Asian countries and Eastern Europe. Poor countries allocate greater proportions of government expenditure on average than do rich countries though the difference is not large.

\(^1\) GERs have to exceed 100 by a significant margin to achieve net enrollment ratios of 100 where there is significant repetition; repetition is especially high in Francophone Africa.

\(^2\) See Table footnote for definition used in this analysis.
Table 1: Summary Statistics on Educational Development and Financing

<table>
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<tr>
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<tr>
<td></td>
<td></td>
<td></td>
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<td>Primary</td>
</tr>
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¹Romania, Poland, Bulgaria, Hungary, former Czechoslovakia, Portugal.
²Republic of Korea; Hong Kong, China; and Singapore: all over GNP/Capita US$5,000; Malaysia and Thailand under US$5,000.
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* Averages are unweighted.

Source: UNESCO database.
(vi) Public educational expenditure has been growing fastest in the poorest countries, averaging about 5 percent per annum from a low base. Poor countries in Asia have experienced the most rapid growth along with the NICs in the sample.

(vii) Pupil-teacher ratios at the primary level are highest in the poorest countries and average above 40:1. The difference between these ratios and those found in the richer groups of countries is bigger for the primary than the secondary level. Asian NICs have higher pupil-teacher ratios for secondary than other groups of middle-income and richer countries.

(viii) Expenditure per pupil at the primary level as a proportion of GNP per capita averages about the same in poor and middle-income countries (about 0.11 percent). It is higher in richer countries (0.16 percent). Large differences emerge at the secondary and tertiary level. Poorer countries typically have twice the level of secondary costs as richer ones when the percentage of GNP allocated per student is compared. Tertiary investment per student as a percent of GNP per capita is often more than 10 times greater.

(ix) The ratio of secondary to primary unit costs is highest in countries with a GNP per capita below $1,000. In these countries secondary unit costs are about four times as expensive as for primary on average. As GNP per capita increases, the ratio of secondary to primary unit costs tends to fall. Tertiary places are 40 or more times the cost of primary places in this group of countries. In middle-income countries, the ratios are around 2:1 for secondary:primary, and less than 10:1 for tertiary:primary. The ratios are even smaller in high-income countries.

This analysis suggests that Asian countries achieve higher rates of schooling at lower levels of public investment than in most other regions; levels of secondary participation differentiate the richer from the poorer countries; public unit costs among primary, secondary, and tertiary levels are more evenly distributed in richer countries; and Asia has seen some of the fastest growth rates in educational expenditure between 1980 and 1990.

**Educational Development Classification of DMCs**

The DMCs as a group contain some of the richest and poorest nations in the world. The region includes the two largest countries, People’s Republic of China
(PRC) and India, and some of the smallest in the Pacific islands. It embraces states that have the most successful record of economic development in the late 20th century—the high performing Asian economies (HPAEs), namely Hong Kong, China; Republic of Korea; Singapore; and Taipei, China—and those where growth has been fragile and disrupted by strife and natural disasters (Cambodia and Viet Nam). Most recently it has come to include newly independent states that have emerged from the dismantling of the Soviet Union. Cultural, ethnic, and linguistic diversity runs across the region both among and within countries. So also do different historic legacies that influence the form, content, and future development of education.

There are a number of possible criteria that could be applied to group the DMC countries. Conventional geographical regional groupings are attractive for some purposes but conceal very large variations in achievements. In reality each region is characterized by considerable differences in size, economic development, history, and culture. An alternative is to select a set of general indicators associated with development. Possible indicators include demographic factors (e.g., population size, population growth rates, measures of urbanization rate); economic indicators (e.g., GNP and GDP [PPP]\(^3\) per capita and growth rates in these, and changes in the structure of employment); and literacy levels. Each would generate groupings with their own strengths and weaknesses. The Human Resource Development Index (HDI)\(^4\) of the UNDP, based on measures of life expectancy, literacy, and real GDP per capita, also provides a convenient measure of the development of human resources in the DMCs.

Using a combination of these characteristics, seven groups of DMCs can be identified. These groups seem to offer a convenient set of subdivisions, though inevitably some of the distinctions between the groups are questionable and several of the countries could be placed in different groups on the basis of weighting particular criteria. The reliability of the data itself is not difficult to question. However it is the best that is available\(^5\). Nevertheless the classification arrived at is helpful in clustering DMCs for the purposes of discussion and provides some statistical

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\(^1\)GDP (PPP) based on Purchasing Power Parity estimates. Penn 5.6 PPP GDP estimates have been included for reference. The data set is less comprehensive than that from the World Development Report as used by UNESCO, thus the latter has been retained in the tables that follow.

\(^2\)The HDI has its critics and is at best merely a proxy indicator of past investments in areas that affect life expectancy and literacy. It is included for purposes of comparison with other indicators.

\(^3\)In a more general sense data limitations and inconsistencies are characteristic of cross national data. It is very difficult to have confidence in time series that extend more than a few years into the past. Many DMCs have changed the definitions used to arrive at particular estimates of schooling parameters. UNESCO itself has also redefined its data categories during the last 30 years. Though several attempts have been made to construct improved data sets many of these are derived from either UNESCO or World Bank education data sets with modifications of uncertain character and quality. This paper has chosen to use the most recent UNESCO education data where it is available. The temptation to modify individual country entries where these seem implausible has been resisted since to change some entries on the basis of other information available and not to change others would be difficult to defend. World Bank and UNDP statistics have been used for noneducational data.
validation and refinement of the Asian Development Bank’s previous classification system (ADB 1991, 12), which is presented in a descriptive way.

Group 1 consists of the two very large countries, PRC and India, which contain more than two thirds of the population of all the DMCs. They are very diverse and include areas where educational participation and achievement levels are very high, alongside subregions where educational disadvantage is widespread and literacy levels are low. Both have HDI ranks above 100 (108 and 135 respectively), 25-30 percent urban populations, per capita GNP between US$300 and 400$; and a majority of the labor force in agriculture. The PRC’s population growth rate is significantly lower than India’s and its economic growth rate is much higher.

Group 2 includes the HPAEs, namely Hong Kong, China; Republic of Korea; Singapore; and Taipei, China. These economies have an HDI rank between 22 and 34; more than 80 percent urban populations; GNP per capita over US$6,500; and the largest proportions of their labor force in services. Malaysia shares many characteristics with this group as does Brunei Darussalam. The former has experienced rapid sustained growth, ranks 53 on the HDI, and has a small (17 percent) and diminishing proportion of its labor force in agriculture. The latter has a high HDI ranking (36) and high levels of GNP per capita with a labor force mostly concentrated in the service sector.

Group 3 comprises a collection of states with HDI rankings between 50 and 100 (Indonesia, Philippines, Sri Lanka, and Thailand) and Pakistan (rank 134). These countries have low to middle levels of GNP per capita, have mostly experienced substantial levels of growth, have an average of about 50 percent of the labor force in agriculture, and generally have low illiteracy. Thailand is both the richest and fastest growing in this group but has the lowest level of urbanization. Pakistan has the lowest GNP per capita and the highest levels of population growth and illiteracy. It shares some characteristics with Group 4 countries.

Group 4 countries have HDI ranks from 113 to 143 and all have lower GNP per capita than those in Group 3. On average they have lower levels of urbanization and industrialization but share other characteristics with those in Group 3. These countries include Bangladesh, Myanmar, and Viet Nam. Mongolia is also included as it has some characteristics common to other members of this group, i.e., low income and growth, high levels of urbanization, and small proportion of the labor force in agriculture.

Group 5 comprises low GNP per capita countries with low HDIs ranging from rank 138 to 169. These states have less than 20 percent urbanization, are predominantly agricultural economies with the great majority of employment in this sector.

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4World Bank (1996) GNP per capita figures have been used for grouping. Generally they are consistent with groupings that would have been produced using Penn 5.6. The latter are not available for all the DMCs and therefore cannot be used for classification.

7HDI not available for Taipei, China.
and little industrial production. Afghanistan, Bhutan, Cambodia, Lao People’s Democratic Republic, and Nepal fall into this category.

Group 6 countries have HDIs covering ranks 90 to 105. These are states recently emerging from the dismantling of the Soviet Union. These countries have low to middle incomes, widely varying levels of industrialization, and are in the process of reconstruction following independence. Most have experienced negative economic growth in the 1990s. Social and economic indicators on these countries are scarce. In general they have inherited substantial educational infrastructure compared to the poorest DMCs and have high literacy rates. This may however now be jeopardized by deteriorating macroeconomic conditions, though data is largely unavailable that might show the effects of recent events.

Group 7 consists of the Pacific island countries, which all have populations of less than 1 million except Papua New Guinea, which shares historic and cultural links with many of the islands. HDI ranks are between 88 and 126 with the exception of Fiji (47). Most of these countries have middle levels of GNP per capita and low rates of urbanization. Other countries included in this group are Cook Islands, Kiribati, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu. The Maldives is included as more similar to this group than any other. Table 2 shows group averages for relevant parameters. It includes means and population-weighted means for the groups.

Taken together, the average HDI of all DMCs is about 100. The groups identified largely conform to the descriptions given. Group 2 has high HDI rank, low population growth, low levels of dependency, high urbanization, high GNP/capita and GDP growth, a concentration of employment in services, and low illiteracy. Groups 3 to 5 occupy intermediate positions between high and low performance on the indicators; Group 6 stands on its own with some similarities to Group 3; and Group 7 follows a pattern with some similarities to Group 3. Measures of gender-related development—the GDI—follow a similar pattern to the overall grouping.

Patterns of Growth in Participation in Education in Asia

Enrollments in the Asian region at the primary level grew by nearly 90 percent between 1960 and 1982 (ADB 1991, 24). During the 1980s, total enrollments in the DMCs increased at a more modest rate as a significant number of countries approached universal levels of enrollment. Table 3 shows enrollment growth in the DMCs.
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Groups

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Notes:

- The averages for percent of labor force for Groups 6 and 7 are not reliable as much data is incomplete. GDP/capita (PPP) for Group 6 is also unreliable.
- Population-weighted means here and in all subsequent tables exclude PRC and India for which statistics are presented separately. Unweighted averages include PRC and India.
- GDI is Gender-related Development Index and is derived from the HDI adjusted for disparities in achievement between women and men in terms of life expectancy, literacy, and income.

Gross enrollment rates across the region have reached levels close to 100 percent. GERs are estimated at over 110 in PRC (120), Indonesia (114), Philippines (112), Fiji (128), and Maldives (130) suggesting that these are countries where more than enough places are available in total to enroll all children of school age. In these countries it is likely that there are substantial numbers of overaged students and repeaters occupying school places.

Table 3: Primary Enrollment Growth in DMCs, 1980-1995

<table>
<thead>
<tr>
<th>Country/Group</th>
<th>Gross Enrollment Rate</th>
<th>Enrolment Growth 1980=100</th>
<th>Net Enrollment Rate&lt;sup&gt;5&lt;/sup&gt;</th>
<th>Boys</th>
<th>Girls</th>
</tr>
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<tbody>
<tr>
<td>All DMCs</td>
<td>92 97</td>
<td>123 145</td>
<td>87 73</td>
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<tr>
<td>People’s Rep. of China</td>
<td>113 120</td>
<td>84 86</td>
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<tr>
<td>India</td>
<td>83 101</td>
<td>134 148</td>
<td>98 76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>105 102</td>
<td>85 89</td>
<td>95 91</td>
<td></td>
<td></td>
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<tr>
<td>Group 3</td>
<td>92 95</td>
<td>119 141</td>
<td>85 76</td>
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</tr>
<tr>
<td>Group 4</td>
<td>92 97</td>
<td>125 146</td>
<td>90 80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 5</td>
<td>77 81</td>
<td>160 186</td>
<td>68 36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 6&lt;sup&gt;6&lt;/sup&gt;</td>
<td>86</td>
<td></td>
<td></td>
<td></td>
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<td>Group 7</td>
<td>86 106</td>
<td>121 151</td>
<td>95 83</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Country data suggest that out of 31 countries, 20 have GERs over 95, six between 85 and 95, and four below 85. These four are Bangladesh (79), Papua New Guinea (74), Pakistan (44), and Afghanistan (31). Pakistan and Bangladesh have large populations and therefore very large numbers of unenrolled children at the primary level.

The sharpest claimed increases in participation represented by increased GERs between 1980 and 1992 are found in India (83-101), Bangladesh (60-79), Nepal (84-109), Papua New Guinea (59-74), and several of the Pacific island states. In these countries substantial efforts have been made to improve access. GERs remain very low in Pakistan (44) and Afghanistan (31) despite the fact that in the former

<sup>5</sup>Based on South and East Asia and the Pacific only. Estimates of net enrollment ratios are less reliable than those for GERs.

<sup>6</sup>One case only.
enrollments are claimed to have increased by 7 million since 1990 (UNESCO 1996, 20), a proportionate increase of nearly 90 percent.10

Enrollments have been falling in some countries. The Republic of Korea (henceforth Korea) has seen a decline to about 70 percent of 1980 levels and Singapore to 90 percent. This is a consequence of relatively high enrollment rates and low rates of population growth. Thailand and Sri Lanka have also seen enrollments decline in the 1990s as population growth slowed. The largest contraction has been in the PRC where enrollments fell by about 15 percent between 1980 and 1990.

Table 4 summarizes changes in access to secondary schooling. Overall GERs were about 55 percent in the DMCs in 1992, compared to an average of 40 percent in 1980. GERs were highest in the HPAEs, usually around 90 percent, indicating that virtually all children were proceeding to secondary and completing most grades.11 The PRC had a GER of nearly 55 percent in 1992 while India claimed nearly 50 percent. Sri Lanka and Mongolia stand out among the poorer DMCs as having relatively high secondary enrollments (over 75 percent) given their levels of income. The lowest secondary enrollment rates are to be found in Pakistan (21 percent), Bangladesh (19 percent), Myanmar (23 percent), Afghanistan (15 percent), Cambodia (24 percent), Papua New Guinea (13 percent), and some of the Pacific islands. Secondary schooling grew fastest in India (96 percent), Pakistan (83 percent), and Sri Lanka.

Table 4: Secondary GERs, Enrollment Growth, and Enrollments as a Percentage of Primary Enrollment

<table>
<thead>
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<td>India</td>
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<td>49</td>
<td>167</td>
<td>44</td>
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<tr>
<td>Group 2</td>
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<tr>
<td>Group 7</td>
<td>37</td>
<td>32</td>
<td>137</td>
<td>33</td>
<td>35</td>
</tr>
</tbody>
</table>

Source: UNESCO database.

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10 As previously noted, these increases may have an upward bias arising from optimistic reporting procedures and lack of data on continued enrolment.

11 Repetition and overage enrollment are low in both countries.
(67 percent) during the 1980s. The ratio of secondary to primary students has been increasing in all groups of DMCs. It is over 75 percent in the HPAEs as a group and is over 90 percent in Sri Lanka, but as low as 16 percent in subsistence low-income countries.

At the upper secondary level, schooling becomes diversified in many countries and technical and vocational schools are introduced. Participation in these is very varied. By 1994 technical and vocational schools accounted for almost 60 percent of all upper secondary enrollments in the PRC after a period of very rapid growth. Other countries with high proportions include Taipei, China (70 percent); Hong Kong, China (58 percent); Thailand (48 percent); Korea (41 percent); and Singapore (38 percent). At the other extreme, Bangladesh, Malaysia, and Pakistan enroll less than 10 percent in special institutions with this curriculum bias.

Access to tertiary level education has grown at very different rates in the DMCs. A comprehensive review of trends between 1960 and 1990 is provided in Woodhall (1992). Higher education has become diversified with more and more enrollments in areas outside traditional three or four-year undergraduate studies. Certificate and diploma level courses are widespread and various kinds of “short cycle” postschool education and training have become available. In some countries, distance learning systems have developed that now enroll large numbers of students. Thus, in Thailand, enrollment for distance learning at the tertiary level was over 500,000 students in the early 1990s, more than two-and-a-half times the number in conventional universities. Korea, Pakistan, and Sri Lanka also had significant enrollments in distance education. In the PRC, television universities were established that enroll very large numbers of students alongside the mainstream system. Distance systems often have low completion rates.

In some DMCs, the numbers of students studying at the tertiary level outside the country are very significant. In the early 1990s the largest providers of international students appear to have been PRC (93,000); Malaysia (32,000); India (33,000); Korea (33,000); Hong Kong, China (29,000); Indonesia (17,000); and Pakistan (10,000). In several countries (e.g., Malaysia, Singapore) international students represented a substantial proportion of the total number of tertiary students. The numbers of international students from Asia will have been falling as a result of the 1997 Asian financial crisis but it is too early for statistics indicating the magnitude of the decline to be available. In several of the Pacific islands the majority of tertiary students were studying abroad. Numbers of international students from the region increased by at least 40 percent between 1980 and 1990 and this is almost certainly an underestimate, given the difficulty of tracing privately financed students. If a substantial part of the cost burden of overseas study falls on the public budget, if the costs are very high relative to domestic provision, and if the social rates of return are relatively low, this raises financial issues.
Available data suggest that at the tertiary level, the number of students per
100,000 has been increasing in most DMCs, in some cases dramatically. Korea has
seen an increase from 1,700 to 4,250 per 100,000 between 1980 and 1992. Under-
graduate and postgraduate enrollments totalled about 100,000 in the late 1970s in the
PRC. By 1995 they were over 3 million, excluding those in adult higher education
and distance programs (Lewin 1996, 5). At the other extreme many of the low-
income and agriculturally based countries remain at levels below 300 per 100,000.
Tertiary level enrollments appear to have been declining in newly independent cen-
tral Asian countries. Typically, enrollment ratios have been highest where private
financing is most significant (e.g., Korea, Philippines). This has no simple explana-
tion partly because this occurs in societies with long and established traditions of pri-
ivate investment in education, and partly because studies uncovering the relationship
between private and public financing are largely absent from the literature.

The relationships among growth in primary, secondary, and higher education
enrollment ratios are complex. Table 5 shows enrollment ratios for selected DMCs at
each level since 1950. From this it is clear that Japan and the Philippines have had
high enrollment ratios throughout the period. The HPAEs have seen rapid growth in
enrollment ratios in higher education since 1970 to mass levels. Thailand has also
increased higher education enrollments greatly over the same period. Sri Lanka and
Malaysia both appear to have concentrated on enrollment increases for primary and
secondary before allowing higher education participation ratios to grow. Secondary
enrollments in Pakistan and Bangladesh have grown slowly to modest levels. As
noted above the PRC’s higher education system has been expanding rapidly in the
most recent period as has India’s. The reasons for higher education growth patterns
vary from country to country and are explored further in Woodhall (1992, 25). Re-
gression analysis of data on Asian countries that seeks to establish differences in
educational investment and participation over time between those countries that have
grown fast economically and those that have not do not lead to simple conclusions
(see for example Behrman and Schneider 1994).

The recent debate on the role played by educational investment in the rapid
growth of a cluster of countries in East Asia is relevant to discussions of educational
futures since it conditions the policy framework within which decisions are made.
Some optimistic estimates (UNDP 1996, 76) suggest that increasing the educational
level of the labor force by one year can raise GDP by 4 to 9 percent over a period of
time, and that had Korea followed a similar pattern of low enrollments as Pakistan
over the last 25 years, its GDP would be 40 percent lower.12 It is argued that most of
the HPAEs have had higher levels of enrollment than other developing countries at

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12The necessary “all things equal” assumption seems particularly unlikely to hold in this case; the esti-
mates and assumptions from which these figures emerge are questionable to say the least. They ignore the
extent to which economies differ structurally and the degree to which unemployment might suppress rates of
return on education.
Table 5: Growth in Enrollment Ratios by Level, 1950-1992

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similar levels of per capita income over the last 20 years, and that heavy investment in the basic cycle often preceded expansion at higher levels that was publicly financed (World Bank 1995, 33). Hong Kong, China; Korea; and Singapore achieved near universal levels of primary enrollment in the 1960s, and Malaysia was approaching a similar level by the end of the 1970s. Secondary school enrollments grew fast in all these countries at the same time that employment rapidly shifted away from agriculture to industry and then into services. At the same time the real growth of educational expenditure per child was at historically high levels—over 350 percent in Korea over a 20-year period to 1989—and much greater than in much of the rest of the world. The implication drawn is that investments in improved quality were accompanying growth in enrollments to near universal levels (World Bank 1993, 44).

What evidence there is on achievement and competencies acquired through schooling in these countries is consistent with this interpretation and shows generally greater levels of student performance than in the other developing countries on which there is data.

Significantly, the high levels of investment in human capital formation appear to have been achieved without unduly high allocations of public funds to educational services, especially if the comparison is made with investment levels and participation rates in Sub-Saharan Africa. Public expenditure on education as a percentage of GNP grew at a similar rate in the HPAEs as it did in many other DMCs. The suggestion is that educational investment in the high-growth economies was both more strategically focused (on basic education first, and in most cases a subsequent emphasis on vocational and technical training at higher levels) and more efficiently managed, and that this produced improvements in access and quality, which translated into economic benefits (World Bank 1993, 198).

Mingat (1995) has echoed these views in an analysis of the growth of Japan; Korea; Singapore; and Taipei, China. He argues that the HPAEs did indeed give early priority to basic education, were successful in achieving high retention rates and levels of achievement, and created conditions where strong positive social demand for education meant little legal enforcement was needed to reach high participation rates. It is clear that internal efficiency has been high and that unit costs have been contained by retaining relatively high pupil-teacher ratios. He also asserts that while first cycle provision (including lower secondary) was heavily subsidized and effectively free, at higher levels most HPAEs have made extensive use of private financing to support expansion with apparently few ill effects and several beneficial ones. Though investment in technical and vocational education has been significant in most cases, it has not predominated at the secondary level and above.

Behrman and Schneider’s (1994) analysis of a wider group of seven fast growing countries is more circumspect in reaching simple conclusions concerning the

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13 PRC; Hong Kong, China; Indonesia; Korea; Malaysia; Singapore; and Thailand.
role played by education in growth. From this work it is clear that these countries as a
group did not have unusually great investments in schooling before growth took off
in the sense that other countries at similar income levels (e.g., Philippines, Sri Lanka)
had similar enrollment rates. They did however have higher literacy rates than other
similar countries and had smaller gender gaps in participation. The patterns that
emerge are mixed\textsuperscript{14} suggesting that other factors might also be important. Wood and
Berge (1994) argue that as trade policies become more similar throughout the world,
these are no longer much of an explanation for export-led growth of the kind experi-
cenced in the HPAEs. Rather, the ratio of human resource endowment (primarily the
result of previous educational investment) to natural resources seems to have ex-
planatory power. The inference is that high levels of human resource development
have indeed been central to the success of the development strategies of HPAEs. Rao
(1995) notes the importance of a stable macroeconomic environment for educational
investments to be effective. He also suggests that part of the relationship between
public expenditure policy and growth depends on the efficiency with which public
institutions mobilize the resources they have and capture additional private contribu-
tions, especially at higher levels. It is evident from this and other studies that though
educational investment may be necessary for transition to a high-growth economy it
is clearly not a sufficient condition.

In summary, it does seem that under appropriate circumstances (which may
differ from country to country), investment in education and training does contribute
to improved productivity in agriculture and industry, has rates of return comparable
to or better than the general opportunity cost of capital, and may also be linked to a
range of externalities that can contribute to development (e.g., lower infant mortality,
reduced fertility, greater gender equity, improved income distribution, and decreased
dependence). These possibilities are widely believed and much of the empirical
evidence supports these views. Counter propositions that low levels of literacy, partial
primary school enrollment, and highly selective secondary participation enhance de-
velopment prospects are nowhere advocated. The real questions seem to revolve
around the balance of responsibilities and benefits between the individual and the
state at different educational levels, more or less efficient educational delivery sys-
tems, and the portability of good practice in education derived from the experience of
the HPAEs.

We now consider some of the policy issues that arise from demography and
patterns of investment in educational development.

\textsuperscript{14}As is recognized in this analysis, this may partly result from inadequacies in the cross national data
used.
Population Growth, Dependency Ratios, and Urbanization

Population growth rates (and the rate of growth in school-age children) vary from a low of around 1 percent (PRC; Hong Kong, China; Sri Lanka; Taipei, China) and even less in some Pacific islands; to over 3 percent (Afghanistan, Pakistan, Maldives, Solomon Islands). Where enrollment rates have been relatively high and population growth has fallen, this has released resources to increase participation since additional places are not needed. Thus in the PRC, enrollments in the first cycle peaked in the early 1980s at around 145 million students. Since then the numbers have fallen to about 15 million and are now growing at the little more than 1 percent per annum. Where a demographic transition to low growth has not taken place, dependency ratios remain high and the burden of financing educational provision remains severe.

Almost everywhere the urban population is growing. In the richer and middle-income DMCs, 40 percent or more of the population is already urban. The proportion is likely to continue to rise as urban migration continues and manufacturing and services replace agriculture as the major employers. The PRC (28 percent urban), India (26 percent urban), and most of the agriculturally based DMCs remain predominantly rural but many are beginning to change as development takes place. United Nations estimates suggest that by 2025 urbanization will have reached 58 percent in East Asia, 55 percent in Southeast Asia, 55 percent in the PRC, 45 percent in India, and 94 percent in Korea (Caldwell and Caldwell 1996, 47).

Dependency ratios (number of 0-14-year-olds as a percent of 15-65-year-olds) are highest in the Pacific islands and lower-income DMCs where they average between 70 and 80 percent (excluding the PRC and India). Levels of urbanization over 50 percent are found in the HPAEs, Philippines, and Mongolia. Urban growth rates are well over 3 percent in low and middle-income DMCs and some of the Pacific islands, and may exceed 6 percent annually. The growth rate of 0-14-year-olds is projected to average about 1.8 percent (2.1 percent weighted). Several of the poorest DMCs have projected growth rates in excess of 2.5 percent from 1990-2000, which compares with less than 1 percent in Hong Kong, China; Korea; and Singapore. Malaysia has a relatively high growth rate projected at over 2 percent compared to other countries at the same income level.

The implications of these changes are important. First, dependency ratios have remained high in most of the poorer DMCs. This means that the burden of financing education falls on a relatively small economically active population, and that this burden is highest in those countries where income is least available.

Second, in these DMCs, large proportions of the output of the school system would need to be trained as teachers if pupil-teacher ratios were to be kept to manageable levels, especially where enrollment growth is necessary as a result of low participation rates. A country with an 80 percent dependency ratio will need more
than twice as many teachers as one with less than 40 percent, all other things being equal. Thus, richer DMCs with lower dependency rates have been able to invest more per child at similar levels of allocation of funds because fewer children per labor force member need educating.

Third, high growth rates of school-age population compound problems of access and provision since they result in relatively short doubling periods of the places that need to be provided. A 2.85 percent rate as found in some of the poorest DMCs results in a doubling of school-age children in 26 years. The same increase takes over 70 years with a 1 percent annual increase rate.

Fourth, urbanization carries implications for school provision, access, and curriculum orientation. More school places need to be provided in urban rather than rural settings. As populations urbanize it may be easier both to enrol more students and to encourage their retention. Problems in providing services to isolated and underenrolled rural schools may diminish.

Educational Financing

Several trends are apparent. There is a wide variation in the proportion of GNP allocated to education. In the DMCs, it is a low of around 2 percent in PRC, Indonesia, Bangladesh, and Lao PDR. It is relatively low in India (3.7 percent) and more than 5 percent in Malaysia; Mongolia; Taipei, China; and some of the newly independent states in central Asia. The PRC and India both appear to allocate about 12 percent of government expenditure to education. The average for all DMCs is over 15 percent with especially low proportions in Indonesia (9.4 percent), Philippines (10.5 percent), Sri Lanka (8.8 percent), Bangladesh (7.8 percent) and, historically, Pakistan. Few countries have sustained budgetary allocation in excess of 20 percent.

If the percentage of GNP allocated to education is divided by the 0-14-year-old dependency rate, some indication of the burden on public expenditure arising from demographic considerations can be illustrated. An analysis of this kind shows that the burden is least in Kazakhstan, Korea, Kyrgyz Republic, Mongolia, and greatest in Bangladesh, Indonesia, Lao PDR, Myanmar, Nepal, Pakistan, and Philippines.

Growth rates in public educational spending between 1980 and 1992 appear to have averaged about 6 percent, indicating a strong commitment in most DMCs to investing in education. Korea has had a particularly high growth rate of over 13 percent and Myanmar one of the lowest (2 percent) along with several of the Pacific islands. Other data (Rao 1995, 60) show that Korea; Singapore; and Taipei, China

\[\text{\textsuperscript{15}}\text{Data not available for Hong Kong, China; Singapore; and Taipei, China.}\]
have consistently allocated high proportions of public expenditure to education since the 1970s, sometimes as high as 20 percent, implying high rates of growth in real resources given the rate at which government expenditure has grown in these countries.

In some DMCs, the state is by far the largest provider of educational services (e.g., Indonesia, Malaysia, Singapore); in others, nongovernment organizations (NGOs) make significant contributions especially at the basic education level (Bangladesh, India). NGOs are also significant in the Pacific islands and Papua New Guinea (Fairbairn-Dunlop 1994). Private provision is much more common in some countries (Korea, Philippines) and at some levels (preschool, secondary, and tertiary). Some DMCs have increased enrollments rapidly as an act of policy (the HPAEs and Malaysia) while others have taken a less proactive role (Bangladesh, India, Pakistan) and have shifted some responsibilities to respond to demand for educational services to more local levels, the private sector, and to NGOs.

UNESCO data suggest that proportions of privately enrolled students are greatest at the preprimary level where in most countries the bulk of provision is private. Private provision at this level averages around 20 percent for primary and 35 percent for the secondary level in the DMCs. These overall ratios conceal the fact that in some countries private enrollment is extensive at the secondary level and above (Indonesia, Korea) while in others it is very marginal (Bangladesh, Sri Lanka). Private secondary schooling accounts for over 50 percent of enrollments in Indonesia, Japan, Korea, and Philippines (Cummings 1995). In some DMCs it has been growing from a small base (e.g., PRC, Malaysia). Enrollments are not a good guide to levels of private financing since in some DMCs private institutions receive heavy subsidies and are private largely in a managerial sense. In other cases they may be entirely privately financed. Fee income in the mid-1980s was thought to account for about 3 percent of costs in the region at the primary level, 18 percent at the secondary level, and 10 percent at the tertiary level. An index of private financing suggests it is highest at the tertiary level in Indonesia, Korea, and Philippines (Tan and Mingat 1992, 40), including Taipei, China.

James (1993) has argued that the proportions of enrollments in private schooling can be linked to combinations of the existence of excess demand, differentiated demand in heterogeneous communities competing for educational opportunity, nonprofit entrepreneurship, and government policies. Her analysis supports these propositions but it is clear that the weighting of these factors as explanations must differ considerably between countries. Government policies can clearly encourage or discourage growth in private schooling through subsidies and tax regimes. In general, private schooling enrollments are higher where government allocations to education are lower. In the case of the HPAEs, however, this is not a good explanation of why Korea and Taipei, China and more recently, Singapore and Hong Kong, China have significant private school enrollments. Neither is cultural heterogeneity since these
are all relatively homogeneous states that share Confucian traditions of secular sponsorship of schools. Her data do not show clear links with income distribution and this may be a factor in some countries. Where public schooling is of poor quality and income distribution is skewed, it is possible that those with sufficient resources will opt out of state education. Within the DMCs there are countries where many of the most prestigious schools are private (e.g., the Philippines) and those where the opposite is the case (e.g., Malaysia). This historic reality has a bearing on whether growth in private schooling is favored.

Cummings (1995, 22) argues that the HPAEs and the other rapidly emerging economies mostly have substantial private school provision and that this has contributed to their ability to provide access to most students without unsustainable growth of public educational expenditure. He also notes that private supplementary provision is widespread and culturally familiar. Most of the countries that raise more than 10 percent of the cost of higher education from students are in Asia. Hong Kong, China; Indonesia; Korea; and Thailand all allocate 70 percent or more of educational expenditure to primary education and have significant traditions of private payments for education (World Bank 1995, 67). In many DMCs parents and students are both willing and able to allocate substantial amounts of money and time to tuition, which complements schooling rather than replaces it and probably improves achievement levels. Private tuition costs paid by large numbers of parents in some of these countries almost certainly exceed the level of investment per student made by the state.

Several issues arise from considerations of finance. First, in some countries, aggregate proportions of GNP and public expenditure are misleading. The PRC and India have systems in which significant proportions of finance are generated from local revenue. These may not appear on national accounts, thus, in these two countries, the relatively low levels of apparent allocation may be underestimates. Similarly, since private expenditure is largely unknown in most countries the overall allocation proportion may not be a good guide to the total level of investment in education.

Second, in smaller countries proportional allocation can be skewed up or down by the effects of high levels of external financing. This may be one explanation for the high levels in some Pacific island states. Aid per capita was over US$300 in almost all of the island states in 1990 and considerably more in some. The effect of inflated defence budgets in times of instability is relevant to Sri Lanka’s apparently low levels of allocation.

Third, overall allocations ignore distributional issues that are discussed in the next section. It matters a great deal if public educational subsidies are heavily biased toward higher education or basic education or some institutions within a particular level.

Fourth, the scope for increasing levels of educational investment is limited in those countries that are already allocating over 5 percent of GNP or 15 percent of
public expenditure. There are a few examples of cases of sustained levels of investment much in excess of these levels. Where allocations are already high, improvements in access and quality must come from efficiency gains, and possibly redistribution of investment between levels.

Fifth, the balance between public and private subsidy is problematic. This is not simply an economic question. The room to maneuver on private financing is heavily dependent on historic expectations and political realities. It is also constrained by the existence of available income that might be mobilized for educational purposes. In the poorest DMCs it is unlikely that substantial improvements in mass access can be financed from private resources since these are so scarce. Where private resources are available in substantial quantity, and means can be found that do not ration access by wealth, it may well be attractive to encourage greater private contributions.

Patterns of Resource Allocation

Current expenditure accounts for about 90 percent of educational spending across the DMCs. On average about 70 percent of expenditure at all levels is absorbed by teacher emoluments, and in many countries this proportion exceeds 95 percent at the primary. This leaves little capacity for investment in materials and effective administration and management. Overall, DMCs allocate 48 percent of current expenditure for primary, 34 percent for secondary, and 14 for tertiary. The PRC (35 percent) and India (38 percent) appear to allocate relatively smaller proportions for primary but this excludes unknown amounts of local level expenditure. Korea allocates 43 percent of public expenditure on education to the primary level—the highest in the richer group of countries—and only 7 percent to higher education as a result of large scale private financing.

The ratio of primary, secondary, and tertiary expenditure per pupil as a percentage of GNP is about 1:2:7 across all DMCs. These estimates are based on 1992 data and can be compared with those reported below by Tan and Mingat (1992) derived from 1980s data. They suggest the relative cost of higher education may have been falling. Several countries appear to have high relative unit costs at the tertiary level including PRC, Malaysia, Mongolia, and Nepal. Korea has the lowest unit costs at the tertiary level both as a proportion of primary costs and as a proportion of GNP, consistent with its long-standing emphasis on subsidizing lower levels and private financing at higher levels.

Data on financing across the region is incomplete and often based on different accounting conventions. The most comprehensive recent study (Tan and Mingat 1992) analyzes data from the mid-1980s and confirms some general patterns. Their
data based on 11 countries\(^{16}\) suggest that secondary school places are about twice as expensive as primary, and for tertiary, 14 times.\(^{17}\) Subsidies of higher education unit costs as a ratio of GNP per capita are claimed to be greatest in Bangladesh (250), PRC (199), India (180), Malaysia (170), Nepal (170), and PNG (978). The ratio of primary to secondary subsidies is greatest in India (2.9) and Bangladesh (5.2). In Korea and Nepal, it is less than one. The ratio of primary to tertiary subsidies reached high levels in PRC (40), India (38), Bangladesh (47), and PNG (37). The PRC’s ratio will have fallen in the 1990s as fee paying is being introduced.

Data on teacher remuneration as a percentage of GNP per capita indicates an “Asian” mean of around 2.5 percent at primary and about 3 percent at secondary. Countries that appear to pay teachers relatively well in relation to GNP per capita include Bangladesh; India; Korea; Papua New Guinea; and Taipei, China. Mingat (1995, 46) argues that the HPAEs have consistently paid their teachers more as a proportion of GNP as they have developed, compared to most other Asian countries, at the same time maintaining high pupil-teacher ratios to keep unit costs down.

The issues that seem to stand out in relation to patterns of resource allocation are first, the question of what is the appropriate mix of public investment at the primary, secondary, and tertiary levels. Ratios of unit costs between levels are relatively low in the more educationally developed countries. Where secondary and tertiary unit costs are high, this constrains investment in expanded access to the primary level if this is far from universal; increases subsidies to those most likely to obtain access to relatively highly paid jobs; and makes it unattractive for talented teachers to devote their energy to teaching at the primary level. Unit costs may need to be relatively high at secondary and tertiary levels in low-income countries to allow something approaching internationally comparable standards to be achieved for a minority. Countries with expanded access to higher levels after universalizing primary enrollment have done so partly by allowing public unit costs at the secondary level to converge toward those in the primary cycle, and by restricting subsidies to tertiary places.

Though it is clear that social and private rates of return can be suggestive of the most appropriate mix of public investment, their use is problematic. In many DMCs robust estimates of rates of return are not available. When available, they often depend on historic data that do not reflect greatly increased participation, structural changes in the labor market, and most recently the impact of recession on salaries and wages (Bennell 1995). Most estimates do not fully account for considerable externalities. Neither do they control well for behavioral decisions that influence participation and achievement in different types of schools (Behrman 1996, 349). Decisions on balance will depend on specific circumstances. These include the

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\(^{16}\)Bangladesh, PRC, India, Indonesia, Korea, Malaysia, Nepal, Papua New Guinea, Philippines, Sri Lanka, Thailand. Differences in reported results arise from the different countries included and the different time periods analyzed.

\(^{17}\)Excluding Papua New Guinea.
existence of minimum amounts of appropriate tertiary provision, the extent to which existing investment is utilized efficiently, the profile of gross and net enrollment rates, and the extent of subsidy at different levels and the scope for its reduction without serious equity and efficiency consequences (Lewin 1995, 34).

Second, overall allocation patterns conceal what are often very different levels of public subsidy within a cycle. There are three main sources of this.

(i) Regional and district differences in pupil-teacher ratios can be large, especially in poor and high-population countries. They may be more than five times greater in some districts than others. The result is that public subsidy per child is widely maldistributed even where overall ratios do not suggest this. Reducing the variance in public subsidy resulting from uneven teacher deployment would contribute to equity gains.

(ii) Where different types of schools exist for historic or policy reasons (former colonial residential schools, special science schools, and elite academies) public subsidy levels may differ considerably within a cycle. Unit costs may be more than 10 times greater in some institutions compared to others. Additional subsidy may be justified if access is open (and not restricted by wealth or particular community membership), and subsidy levels are reflected in performance gains. It may also be justified where special institutions meet the needs of educationally disadvantaged groups. If it serves to perpetuate existing social and economic divisions it may be neither equitable nor efficient.

(iii) Within-school variations in public investment per child are widespread but rarely systematically addressed. Budget and nonbudget (i.e., locally generated) income may be disproportionately allocated to the needs of the oldest students in the highest grades and those most likely to succeed academically. This may also be inequitable and inefficient if as a result, the disadvantaged leave before reaching higher grades, and the pool of talent from which tertiary students are selected is depleted to exclude those without adequate private resources. Average subsidy levels are blind to the fact that the poorest trained teachers often teach the lowest grades, class sizes are largest, and use of expensive educational facilities is least.

Third, it may be that a strategy that combines real increases in teachers’ remuneration with increases in efficiency can offer learning gains and increased access. If some of the more educationally successful DMCs are able to pay teachers relatively well and retain high-performing staff by offering competitive remuneration, and at
the same time deliver services efficiently at relatively high pupil-teacher ratios, others might move in the same direction. Salary increases alone will not achieve this unless coupled with reforms that provide links between performance and remuneration, unblock promotional hierarchies based solely on seniority, and provide incentives to improve provision to the whole range of students enrolled.

Fourth, the distribution of expenditure between salary and nonsalary recurrent is often problematic. Teacher’s emoluments absorb over 90 percent of expenditure in most of the less developed DMCs and sometimes well over 95 percent. This leaves very little for learning material, teaching aids, and consumable items that can make the difference between a rich learning environment and one devoid of stimuli. The more educationally developed DMCs tend to have a more balanced pattern of investment. Thus Korea allocates only 74 percent of public funds to salaries at the primary level, amounts similar to those at the secondary level (Cheng 1995). This allows teachers greater scope and imagination in lesson development and provides more opportunities for children to learn through access to a range of resources and methods.

Patterns of resource allocation are closely linked to administrative preferences and the nature of financial support. At the core of this debate is the extent to which decentralization is favored over central administration, and community or private finance over public support. It is usually argued that benefits for access and quality will emerge from decentralized administration, which places decision making power at lower levels closer to those to whom educational services are delivered. Communities, parents, and students have a direct stake in effectiveness and efficiency and will behave to maximize benefits and minimize waste (World Bank 1995, 126).

This of course is possible. However there are contraindications that in some circumstances decentralization at the school level may lead to diminutions in equity and efficiency. Cheng (1994, 268) charts how, in the PRC, increased dependence on local revenue has disadvantaged many rural schools to the point where salary payments have become irregular and differences of quality between poor and rich areas have dramatically increased. This echoes the findings of Lewin and Wang (1994, 161) that new skews have increased unit costs that favor the already advantaged, and that local administrations may not favor investment in improvement in the most marginalized schools as much as central government.

Increasingly it is recognized that though decentralization can be beneficial, whether it is or not will be determined by some mix of administrative capacity, cultural traditions of support for education, levels of income and its distribution and growth, and political preferences (Bray 1996, Cummings 1997, and World Bank 1995). Policy choices must recognize the constraints and opportunities these factors create. Hallak (1990, 273) suggests a typology of the circumstances under which decentralization of administration and finance may be appropriate. In essence this is pessimistic of the possibilities in the poorest countries with the weakest infrastructure.
and scarcest resources, and favors hybrid systems that mediate local autonomy with accountability to higher levels.

**Internal Efficiency and Quality**

Internal efficiency and quality are closely linked. Self-evidently, systems that provide high levels of access, low repetition, and constrain the growth of unit costs may appear efficient but may not provide learning relevant to life futures and may have low standards of achievement. The discussion below explores aspects of internal efficiency as commonly measured and reviews some of the issues relating to educational quality and relevance.

The internal efficiency of education systems is a central concern in determining access, since inefficient systems provide less access for the same level of public investment. Key indicators of internal efficiency are completion and graduation rates through to specific grade levels, rates of repetition and dropout, unit costs (largely driven by pupil-teacher ratios), and any indicator on attainments associated with schooling. Completion and graduation rates are usually considered at the end of an educational cycle. In remote and marginalized communities, completion rates of the primary cycle may be very low and on-schedule graduation rates may suggest that less than 20 percent of those who do complete do so in an appropriate number of years (Lewin and Wang 1994). This is where certification takes place that determines access to the next level and to the labor market. Partial completion of a cycle bestows none of these benefits. Substantial grade repetition is generally inefficient unless it can be shown that repeaters increase their chances of successful completion of a cycle. In most of the DMCs with significant repetition rates, no special arrangements are in place to teach those who are repeating, and it is likely that there are strong associations between repetition and subsequent propensity to drop out. Very high rates of repetition (as high as 50 percent) can be found around public examinations and selection points. This may be very inefficient from a selection point of view. Since most examinations are not age-corrected, successful candidates may succeed at their second or third attempt not because they are more capable students in relation to their age cohort, but because they enjoy the benefits of maturation and practice effects. The net effect may be to introduce queueing into selection for higher levels (and for end-of-cycle qualifications with a value in the labor market), which can substantially inflate the public cost of provision.

Pupil-teacher ratios (PTRs) largely determine unit costs. Clearly there may be tradeoffs between pupil-teacher ratios and teacher salaries—within a static budget, choices have to be made between higher ratios and higher teacher salaries (which might maintain or improve teacher quality), and lower ratios with lower salaries. If associations between class size and attainment are weak within a wide range of class
size, lower unit costs (and improved access) can be achieved with increased pupil-teacher ratios without adverse effects on performance of pupils. For any given system, there will be a band of achievable pupil-teacher ratios that represent the most efficient compromise between values that are too low, carry high costs, and cannot be demonstrated to provide commensurate benefits for learning outcomes; and those that are too high, relatively cheap, but demonstrably damaging to achievement.

Primary completion rates in some countries are low. The percentages reaching fifth grade in Afghanistan, Bangladesh, and Pakistan are all below 50 percent. Repetition can also be high (Bhutan, Nepal, and Lao People’s Democratic Republic have repetition rates for primary of 19 to 28 percent). Pupil-teacher ratios can also appear low (PRC, Thailand, and Malaysia have pupil-teacher ratios for primary and secondary, respectively, of 22 and 15, 17 and 18, and 20 and 19). In some cases primary PTRs are very high and secondary PTRs relatively low (e.g., Bangladesh has a primary PTR of 63 and a secondary PTR of 28). In Cambodia, urban primary schools can be identified, which run three shifts and teach in groups of more than 120 (USAID 1994).

The size of PTRs also has to be considered in relation to the length of the school year and the actual number of days that schools are functioning normally. School years vary from a high of around 220 days in the Korea to around 180 days in much of South Asia; teaching hours per day also vary from less than 3 hours to more than 6 hours. Classroom teacher attendance in Sri Lanka has been estimated at less than 70 percent of the number of days available as a result of a combination of casual leave, absenteeism, examination periods, and preparation for special events (World Bank 1989). Efficient deployment of teachers and better use of their time are at the heart of attempts to improve internal efficiency.

High rates of repetition and dropout are central features of low levels of internal efficiency. They are qualitatively different. Repetition is the direct result of policy on assessment and curriculum development that permits or discourages repetition. If this were not so, it would be very difficult to explain why DMCs have such varied rates of repetition at otherwise similar levels of educational development. Some of the reasons are historical. If it is permitted for reasons of inadequate achievement its costs (of additional school places to the possible exclusion of those unable to gain access because of a restricted supply) need clear justification in terms of subsequent achievement gains. If repetition simply results in following the same learning program with no special enrichment, it may not result in learning gains, except as a result of students’ increased age. It would seem important that if learning competencies are to be specified for progression, they should be attainable by the majority of students under normal school conditions. If this is not the case, high rates of repetition with doubtful benefits will be the inevitable result. Where there are wide differences in rates of progress, opportunities may exist to allow accelerated progression of the
most capable students. This would have the attraction of releasing school places that could be allocated to others.

Dropout differs from repetition in that its causes are more complex and many are not under the direct control of the education system. Though school quality, and actual and perceived progress often figure as factors in decisions to drop out, non-school factors are often judged more significant. These include poverty, the opportunity costs of remaining enrolled, and social attitudes of parents and the community, which may be especially influential in the case of female dropout. Clearly, in those cases where school quality is demonstrably problematic, improvements will improve the “flow efficiency of schooling” (Harbison and Hanushek 1992, 195). Higher quality schooling itself may not improve retention and repetition rates if the underlying causes are attributable to other factors.

Attempts to assess school quality have a long history and no simple solutions. Ross and Mahlick (1990) recognize three different approaches—education production functions, logical contingencies, and academic performance indicators. Most analysts explore these and other possibilities and then accept that in practice school achievement data are the best proxy available at a macro level. Thus Harbison and Hanushek (1992, 82) argue that “the ultimate goals of schooling are virtually impossible to measure at the time of schooling .... when assessing the character and determinants of successful schooling proxies for these true goals must be employed. This leads us to standardized tests of subject matter.” The international literature on school effectiveness and school achievement reflects this with many studies designed to explain differences in achievement based on examination scores as the dependent variable.

Evidence on achievement of students is only now becoming available. Its use for comparative purposes is statistically complex. Standards vary, valued educational outcomes differ from country to country and curriculum to curriculum, and samples of students chosen for comparative purposes may or may not be comparable, to name but a few of the confounding factors. Fuller (1987) reviewed the results of available school achievement studies from more than 50 countries mostly based on using science and mathematics scores as the dependent variable. In brief this review concludes that length of instructional program, school feeding programs, school libraries, years of teacher training, and availability of textbooks appear as significant correlates of high levels of achievement in the majority of cases. Textbooks appear especially cost-effective (Heyneman et al. 1978). Repetition, reductions in class size, increased teacher salaries, and the existence of science laboratories are often not significant. More recently Fuller and Clarke (1994) essentially confirm these results. From these reviews it is clear that the reasons lying behind the correlations in particular studies differ, e.g., higher levels of teacher training may be widely associated with raised levels of secondary science achievement but the causal relationship is likely to be complex; do trained teachers practice in ways consistent with their training, and are they posted to schools with a more receptive learning environment and
more motivated students; and science laboratories may not have a direct association with measured achievement because they are not used appropriately and science examinations do not assess skills likely to be developed by laboratory work, not because they are intrinsically irrelevant to learning science (Caillods, Gottelmann-Duret, and Lewin 1997).

Study results of the International Association for the Evaluation of Educational Achievement (IEA) and those of the International Assessment of Educational Progress (IAEP) are of interest and both included a small number of the DMCs. The IEA studies of science achievement include data from PRC; Hong Kong, China; Korea; Papua New Guinea; Singapore; Philippines; and Thailand among the DMCs, along with data from 13 developed countries. The results show that for the 14-year-old population samples, Korea and PRC rank fifth and seventh respectively; Singapore and Thailand rank 14th and 15th; and Papua New Guinea and Hong Kong, China rank 18th and 19th. In the pre-university sample the positions change and Hong Kong, China ranks first or second for each of the three main science subjects, with Singapore close behind. Korea’s performance overlaps with Thailand’s around ranks 13 to 15. Singapore and Hong Kong, China both have very selective systems that partly explain their superior performance at the pre-university level. Those taking science are a much more selected group than in Korea. The IAEP studies confirm that the performance of Korean 13-year-olds in science is better than most developed country samples in the study, as is that in Taipei, China and the PRC sample chosen. In mathematics similar patterns appear with the same countries performing at the highest ranks.

Simple conclusions cannot be drawn across the countries included in the achievement studies without a detailed understanding of the subtleties of the comparisons being made and their limitations. Even less can they be projected onto other DMCs that may or may not share educational characteristics. There are a range of tentative observations that emerge that might be the basis for more concerted analysis of achievement levels. These confirm the importance of family background traits in student achievement, indicate that compulsory study of science may raise average levels of achievement, and fail to support the view that achievement of the best students suffered where the proportion of students studying a subject was greater. They also provide some evidence that teacher training raises achievement in some subjects but that class size is not cross nationally related to achievement. A provocative finding from the IEA studies is that in some countries (e.g., Japan) nearly all the variation in achievement scores originates within classes, whereas in others (e.g., Philippines) most of the variation arises from differences between schools. Clearly interventions designed to improve achievement need a different focus depending on whether variance arises most from within or between school factors.

Some light on relationships between income and achievement is shed by a recent study on data from Pakistan (Alderman et al. 1996). This research confirms the
common association of household income with achievement and suggests that the
gap is narrowing in rural areas. The decomposition of factors influencing achieve-
ment between direct income effects and income-associated effects (household char-
acteristics not determined by income) indicates that direct income effects are likely to
explain less than half the difference in learning outcomes, i.e., raising incomes alone
would have a modest impact on reducing gaps in achievement between children from
rich and poor households. Other factors such as home learning environment and
school quality would seem to be more important and are associated with more than
50 percent of potential gains from direct increases in income.

There is a wealth of other country-level data on assessment that is well beyond
the scope of this paper to review. Several points arising from the literature are rele-
vant and raise issues for achievement in the DMCs in the future.

First, achievement levels expressed in terms of pass rates often seem to indicate
that achievement levels are increasing as greater proportions of students are pro-
moted from one level to the next. This may be the case but examination of raw score
data at the end of primary and lower secondary can indicate that large proportions of
candidates are scoring at levels not much better than chance on multiple choice
question papers. Pass rates can be allowed to increase in norm referenced examining
systems even if actual performance is unsatisfactory and independent of whether it is
improving. Data on entry scores of those training to be teachers can also provide a
salutary reminder of the academic quality of entrants to the teaching profession. In
some countries many only reach levels sufficient to pass.

Second, it may be that high rates of curriculum reform can have asymmetric ef-
fects on performance in different types of schools. In particular where reform is fre-
quent, and institutional capacity of schools to respond limited, it is those institutions
with the greatest number of trained teachers and best links with examining bodies
that can respond most quickly. Isolated rural schools may only begin to understand
what is required of them by the time the next set of reforms is introduced. There is
some evidence that success rates in different types of schools may indeed diverge
immediately after significant changes in curricula that result in changed assessment
practices. This may penalize students in low performing schools and suggests that
some types of curriculum development activity may turn out not to be propoor even
if they are intended to improve relevance and achievement among the disadvantaged.
It depends a great deal on how curriculum development is implemented.

Third, changes in assessment practice that are widely advocated in some of the
DMCs, which include more continuous assessment, greater amounts of school-based
examining, and assessment of noncognitive outcomes (e.g., attitudes, personality
traits). These require adequate training of teachers to use such methods of assessment
(most teachers have little preparation during periods of teacher training); school envi-
ronments that are not so divergent that those enrolled in disadvantaged institutions
will have little access to complementary inputs to undertake project work etc.; and
reporting and selection systems that take advantage of the quality of information that can be generated. Moderation, which can ensure similar standards are applied between schools, is essential if selection based on such assessment is to be seen as fair. The assessment of noncognitive outcomes of schooling is widely recognized as more problematic than that of conventional cognitive outcomes. The definitions of what constitutes evidence of an attribute under what conditions are often ambiguous and results may be even more subject to practice effects than normal examinations. Many proposed assessment reforms also place considerable additional burdens on teachers (record keeping, analysis of results) which may seriously detract from teaching time. It may be more attractive to improve the quality, validity and reliability of conventional assessment instruments than to embark on novel innovations unless the need for these, and their benefits, can be clearly detailed.

Fourth, competency-based assessment, where specified competencies are used to define desirable outcomes, has some obvious attractions. All those who succeed should possess the appropriate competency, students are judged against a standard rather than the performance of other students, and measurable progress is possible for all students, even those consistently performing worse than their peer group. In practice there are difficulties. Simple performance statements where outcomes are unambiguous can be defined but more complex learning outcomes are often not easily reduced to a competency statement. There are risks that if competencies are defined at levels most can achieve, they will be regarded as trivial. And, if defined at levels related to expectations of educational elites, most will fail. Finally, statements of desirable competencies can proliferate into lengthy lists that become inaccessible to teachers and difficult to use to inform teaching and learning.

Fifth, many have recognized that if achievement is the favored proxy for school quality and, if a major goal is to raise quality, reward systems must recognize successful interventions that improve pass rates and average scores. It is naive to suppose this is not already the case. The status of schools and teachers is widely linked to examination pass rates in public selection examinations (Dore 1997). “Payment by results” has a long history at least as far back as the 19th century debates in England that influenced some of its former colonies. Recently Hallak (1990, 119) notes that it is likely to be better to measure outcomes than inputs when assessing school quality, and that strategic management for quality improvement depends in part on defining clear achievement levels and improving assessment of whether they have been achieved. The corollary of this, linking incentives to performance, is widely suggested Hanushek (1995, 239) though there is little firm evidence of its effectiveness. Behrman (1996, 357) advocates more extensive use of incentives tied to individual and school performance while recognizing some of the difficulties in practice (adverse effects on equity, inadequacy of performance data). Many DMCs have systems of rewarding exemplary performance e.g., PRC, Singapore, Sri Lanka. Some offer status gains through public recognition, others couple these with increases in income.
for master teachers. Systems for rewarding schools for improved quality can be complex and contentious. They invite “value added” debates about the extent to which overall level and gains in performance should be adjusted to take into account contextual features of schools and their students. High pass rates may be achievable by the best students almost despite their teachers; low but improving pass rates should attract as much recognition as high pass rates if it is improvement that is to be rewarded. Difficulties in determining which rewards would have a positive effect on performance are substantial—“we have little information how teachers would respond to different payment schedules” (Harbison and Hanushek 1992, 206). Some incentive systems could depress morale and motivation among those whose chances of receiving them are remote. This is an area where policy needs to be based on empirical data specific to particular education systems.

Quality must be associated with relevance as well as achievement. Most DMCs have seen the proportions of employment begin to shift from agriculture to industry. In these cases the importance of effective secondary schooling are becoming clear. DMCs with an industrial base all have secondary GERs that approach or exceed 50 percent. It is at this level that abstract thinking skills are beginning to be acquired, specific occupationally relevant skill can be taught, and students become motivated to seek employment outside agriculture. Lower secondary schooling in these countries is becoming universal and upper secondary schooling more diversified. Its content is changing to reflect new needs but in many DMCs it retains a strong academic character.

Low achievement in critical areas, especially those related to science, technology, mathematics, and communication skills, need identification and explanation. In some cases problems may be partly the result of curricula transfer and orientation that is removed from students’ experience and needs, especially in the less educationally developed DMCs. As secondary school systems expand and become less selective on entry, average achievement levels may fall if curricula offerings are not adjusted to reflect the more differentiated needs and capabilities of secondary students. Problems of retention and progression may also be exacerbated. Achievement levels among average and below-average students need to be set at levels that are achievable and represent useful learning gains. This may be difficult if standards applied are derived from international norms.

Employment-related certification is also likely to grow alongside increased employment in industry as the value of employable skills increases. Most DMCs are far from having integrated education and training systems that provide reliable indications of students’ capabilities as they enter the labor market. This creates both opportunities to redefine valid knowledge, and risks that international norms and standards may begin to take precedence over national ones.

In the HPAEs the service sector dominates employment. This invites the consolidation of secondary schooling and extended periods of skill development
post-school related to the wide range of jobs that are being generated. Many new jobs are in sectors that have high information content and need familiarity with information technologies. They require developed interpersonal skills, analytical capabilities, foreign languages, and the abilities associated with management. The knowledge-intensive parts of these labor markets employ those with the highest levels of technical competence and increasingly depend on creative design, product innovation, efficient production technology, and the organization of work that adopts best practices and flexible utilization within the workforce. This may imply needs to develop new emphases in educational provision that promote new styles of learning and more broadly defined outcomes, which can lead to more creative thinking and innovation. In the HPAEs education systems are likely to move toward increasing specialization at higher levels, and more differentiated pathways through institutions that allow learning at many different ages. The proportions of enrollment allocated to applied areas of science technology, information technology, and business and management are likely to remain high.

**Educational Development Prospects**

Some speculation is possible about the educational futures that are likely to be realized in the different groups of DMCs. Any attempt to do this is at best risky and history provides a reminder of how fragile foresight can be. Predictions of the PRC’s economic and educational growth, vocationalization of secondary schools, and increasingly autonomous higher education institutions with large numbers of fee-paying self-supporting students entering into a burgeoning socialist market economy were conspicuously absent in 1975. Malaysia’s rapid sustained educational development was easier to anticipate. However, the successful contribution of education policy to maintaining stability, redistributing employment opportunities, and generating wealth surprised those critical of its strongly interventionist character under the New Economic Policy. And Sri Lanka’s disastrous experience with endemic strife both within the majority community and between it and the Tamil minority was neither anticipated in 1975 nor curtailed over the period since. Its impact on the educational development that might have taken place in a country renowned for its high levels of access and achievement at low cost can only be lamented.

**People’s Republic of China**

As the 21st century approaches, PRC and India find themselves confronting rather different educational futures. In much of the PRC, access to 6 to 9 years of education is assured, enrollment rates are high, and the main development agenda is improved internal efficiency, greater quality, and higher levels of achievement.
Legislation has been in place since the mid-1980s to universalize provision and this has largely been achieved. In the poorest areas and among the national minorities, underenrollment, dropout, and substantial repetition remain problems, but are manageable within domestic resources. Sustained rates of economic growth and generally low population growth (though not in many national minority areas) should facilitate the extension of the educational franchise. What will be achieved in basic education will depend on the political will to spread social benefits of development to areas that lag behind the coastal provinces and developed parts of central PRC.

At the secondary level, it seems likely that enrollments will continue to grow fast to the point where most complete lower secondary schooling. This will substantially increase rural enrollments. Participation rates at the upper secondary level will continue to expand and will probably retain an emphasis on technical and vocational education where the challenge is to maintain relevance to employment and develop a consistent certification system. Tertiary-level enrollments are likely to grow substantially to meet demand from students. Tertiary institutions will be consolidated into fewer larger institutions, and will progressively take more responsibility for their own funding. Under the “211” tertiary development program, a core of universities, perhaps 20 or so, will remain directly supported as national institutions and a similar group will retain provincial government support. Most of the others will move away from the control of specific ministries and will have to seek mixed sources of funding. Both at the upper secondary and tertiary levels, it can be expected that fee systems will provide a growing proportion of operating costs, and the numbers of self-financing students will continue to increase.

Competition for access to secondary “key schools” will intensify as will entry to associated primary schools and prestigious universities. Regulating access in ways seen as equitable and socially efficient will be an important issue. In many respects, the PRC will probably move toward patterns of participation and access found in several of the HPAEs, while retaining and developing a large range of pathways of delivering educational services using the media, adult study programs, and training related to the workplace.

Over the next 30 years, the PRC will experience the effects of rapid well-advanced urbanization, and an ageing population. The former will concentrate more and more educational services in towns and cities and may exacerbate the problem of the relative neglect of educational development in rural areas. The ageing population will ultimately cause the dependence ratio\(^{18}\) to rise with possible consequences for the amounts available to subsidize public educational provision.

\(^{18}\)In this case dependence ratio includes those over 65.
India

India approaches the 21st century with a different starting point. Its educational development has been even more uneven, its enrollment rates are much lower, illiteracy remains a massive problem, population growth rates are high (especially where educational services are weakest and dependency rates are highest), and the prospects for economic growth are more modest than in the PRC. Disparities in education have strongly regional and urban rural characteristics in India. Population growth rates, and hence dependency rates, appear to be falling faster in the south than in the north. Gender differences may also be similarly polarized, and enrollment rates vary widely between and within states and urban and rural areas.

It seems clear that priorities should focus on improvements in access and quality at the basic education level where access and process is demonstrably unsatisfactory. This will be the surest medium-term strategy for increasing adult literacy, benefiting from the economic advantages of schooling for agricultural production, and enjoying the gains associated with externalities linked to increased years of schooling, especially for girls. Gender differences in participation should diminish as access improves. It may be that the number of girls is decreasing relative to the number of boys as a result of parental preference for boys. If so, enrollment rates for girls may rise as a result of a decline in numbers of females of school age, for reasons that are perverse in terms of gender equity. Some states have achieved high rates of schooling and literacy at manageable levels of resourcing. Kerala’s achievements are widely recognized. This suggests that large gains are possible given the political and institutional structures necessary to convert policy on universalizing access into a reality. Without this it is unlikely to happen.

At higher levels, growth in the Indian economy will require improvements in quality and quantity of educational output. Secondary GERs will increase, as will specialization, reflecting changing labor market needs. If the basic cycle of education up to grade 9 is to be available to all this growth will have to be substantially financed from private resources and the relative unit costs of primary and secondary education may have to fall. A major challenge will be to manage growth within regulatory frameworks that assure quality and provide selective subsidies that allow access to the economically marginalized. If this proves difficult it is likely that inequalities related to educational achievement will grow rather than diminish. Demand for tertiary education will also grow and the cost of providing it will encourage further moves to recover costs from those who benefit and facilitate private and mixed public and private financing. Key institutions are likely to continue to benefit from national and state funding as well as attract private contributions from sponsors.

High rates of urbanization will create growing challenges to cope with school provision for high density, low-income populations. Alternative, lower-cost delivery systems employing distance education techniques; part time evening study; and
information technology are likely to grow in importance at the post basic education levels.

The High-Performing Asian Economies

Educational futures in the HPAEs look very different. In this group economic growth has been strong, population growth rates are low and still declining, enrollments are approaching universal levels at primary and secondary, illiteracy only exists on the margin, and distribution of public expenditure is fairly even. At the primary and lower secondary level, enrollments are likely to fall for demographic reasons, creating further opportunities to improve quality and enrich curricula offerings. PTRs may continue to decline slowly and those at primary are likely to converge toward those at secondary. Private provision is likely to continue to grow both in separate schools and in parallel systems providing complementary services. Preschool enrollments will increase rapidly, mostly outside state provision, as a result of available income continuing to rise, parental investments in schooling being concentrated on fewer children, and strong beliefs in the value of a “head start” in schooling.

At the secondary level, school facilities are often good and will continue to improve, especially in relation to access to new information technologies. Skill-based and competency linked curricula are likely to spread and links with changing patterns of employment, especially the continued growth of the service sector, will have an impact on teaching and learning. Some of these countries appear to have low between-school variations in achievement, in others the school attended seems to account for much of the variation in performance in particular subjects. Differences between schools may be expected to diminish as resource distribution ceases to be a major constraint and competitive pressures improve the performance of lower-achieving schools.

Competition for access to higher education is likely to intensify though participation rates will increase to levels where a majority of the population experience some postschool periods of study and training. The competition will center on the most prestigious institutions at home and abroad. The tertiary sector as a whole is likely to become more diversified and accessible to a wide range of students including those in midcareer and those in nontraditional fields of specialization. Cross border flows of students will also increase both from HPAEs to developed countries and from other DMCs to the HPAEs. Private financing and mixed systems of support will develop where these are not already dominant; where they are already substantial they will grow further. The integration of Hong Kong, China’s education system into the PRC may influence the rate of change in PRC institutions particularly at the tertiary level. Malaysia will probably converge more toward the characteristics of the HPAEs. Its Wawasan 2020 policy to industrialize is likely to be largely realized.
Middle and Low-Income DMCs

In middle-income industrializing countries\(^\text{19}\) several scenarios are possible. In Thailand, Sri Lanka, and Indonesia survival rates to grade 4 are high and enrollment rates are approaching universal levels for primary. Quality remains a problem, as does repetition and dropout. Uneven resource distribution, which results in different levels of service in more and less favored locations, remains a problem that needs to be addressed. Urbanization will result in more resources being needed for city schools. In these countries a demographic transition to low growth is established. Universal access to a basic education cycle is achievable within the next 20 years. Schooling rates at secondary will increase, especially in Thailand and Indonesia, and it is here that the resource demands are likely to be largest. Higher education growth will occur especially in privately financed institutions that already enroll large numbers in Indonesia, Philippines, and Thailand. Higher education growth in Sri Lanka, which is largely publicly funded, will continue to be constrained by budgetary pressures unless alternative sources of funding are developed. Pakistan stands out as having higher population growth rates and dependency ratios than other countries and low enrollment rate at all levels. It also has wide gender discrepancies, high illiteracy, and unequal access. It has a long way to go to reach levels of access comparable to the more educationally developed DMCs. Substantial efforts are being made to increase access and these will need to be sustained.

Poorer DMCs with a developing industrial base include Bangladesh, Mongolia, Myanmar, and Vietnam. Bangladesh has the largest unschooled population, the greatest dependency rate, highest illiteracy, and lowest enrollment levels in the group. Its priorities for access lie at the primary where only about half of school-age children are enrolled. Financing this will be problematic unless public allocations are raised and redistributed to favor primary schooling. The burden will be increased by the need to reduce very high PTRs and train large numbers of additional teachers. The other countries all have high primary enrollment rates. However, Myanmar and Vietnam have low secondary participation. This is likely to change, especially in Vietnam, as economic growth and industrialization take place and rapid expansion at the tertiary level is a possibility. Urbanization is already high in Mongolia and schooling growth will be predominantly urban-located in the future.

The poorest agriculturally based DMCs confront the most difficult conditions. Basic educational infrastructure is impoverished, resources for growth are heavily constrained, and needs are greatest. School provision is predominantly rural, retention is poor, repetition is high, and illiteracy widespread. These fundamental realities will condition educational development and should focus attention on building basic

\(^{19}\) Based on conventional estimates of GNP. Penn 5.6 PPP estimates would group countries somewhat differently. The educational characteristics would not change but their apparent relationship with economic indicators might.
delivery systems with reasonable coverage and quality. Expansion at higher levels that utilizes public funding should be deferred until greater proportions of the population acquire basic skills.

Data on the newly independent states in central Asia is sparse and conditions are transitional. Enrollment rates at the primary and secondary levels appear high but are still some way from providing education for all. Economic restructuring is likely to influence the evolution of the education system, i.e., while growth is negative and readjustments have not paid off in terms of recovery, the resource base for education will continue to decline. Tertiary funding arrangements are likely to change as it becomes clear what the costs are and how output is related to national needs. Gains in internal efficiency are likely to be needed to finance expansion against a backdrop of planning in austerity.

In the Pacific islands grouping, primary enrollment rates are high except in Papua New Guinea where there is some way to travel to reach universal access. Fiji stands out as having high levels of provision. Problems associated with size are definitive for these countries: most will continue to send students overseas for higher levels, this being the only economic option. Migration will also affect demand in some states. Curriculum dependency is also likely to remain in the smaller countries, many of which also receive high levels of external support for education.

**Policy Priorities in the DMCs**

Educational policy options in the DMCs are conditioned by available resources and the sociopolitical environment in which choices are made. Macroeconomic conditions are likely to remain difficult in the newly independent central Asian economies, in Afghanistan, Bhutan, Cambodia, Lao PDR, and Nepal, and probably in Bangladesh and Papua New Guinea. In most, real growth in GNP per capita seems likely to be slow and unlikely to release substantial additional resources for educational investment. External assistance may have the biggest role to play in these countries. India, Pakistan, Indonesia, and Sri Lanka appear to have better prospects of real growth, as do Vietnam and the Philippines. In these countries indigenous resources may be sufficient to support educational development given appropriate political will. They may also benefit from complementary external support designed to achieve mutually desired ends.

Thailand, along with Malaysia, the HPAEs and PRC now have to confront the short-term challenges created by devaluation and the onset of unaccustomed recession after long periods of sustained growth. It is simply too early to answer the question as to whether “sick Tigers bounce”. It ought to be the case that, in the medium term, the human resources that have been accumulated provide a springboard for a new generation of growth. Devaluation can increase competitiveness and lead to
greater market shares. Key elements of the “real economy” remain despite short-term fluctuations in confidence and exchange rates. There is no economic consensus as to how long the recession will last or how deep it will be. Unless it is prolonged the prospects for further educational development remain good. Demand for educational services is unlikely to diminish, and further investment in higher levels of skill and competence remain attractive. The competitive advantages of a more educated labor force in high value-added and knowledge-intensive production remain.

Previous research provides some pointers to some of the possible consequences of austerity (Lewin et al. 1982, Lewin 1987). This advances seven propositions.

(i) Social sector spending is especially vulnerable to general budgetary restraint.
(ii) Reallocation will favor salary over nonsalary and capital expenditure.
(iii) Higher education may be able to protect itself more effectively against cuts.
(iv) Investment in formal education is less vulnerable than that on informal and adult education programs.
(v) Significant cost-reduction in school systems can only come from reductions in unit costs that are mainly salary-dependent and this may compromise quality.
(vi) Various kinds of cost recovery will appear a more attractive policy option.
(vii) The poorest countries may become more dependent on donor support and concessionary financing.

These propositions are historically testable and provide some guide to thinking about educational futures in those DMCs worst affected by recent economic events. Studies conducted over the 1980s lead to mixed results on the key question of the impact of recession on social sector investment. Thus, Hicks and Kubisch (1984) found that educational expenditure suffered less in recession than administrative and defence spending in the 37 cases they examined. The analysis of sustained recession suggested a probability of declining allocations as a proportion of public expenditure, and increases in recurrent spending compared to capital. Sahn (1992) suggests that there is no systematic pattern of impact on social sector spending before and after structural adjustment programs. Noss (1991) identifies the characteristics of countries that have been particularly vulnerable to cuts in the social sector.

The Asian recession is still taking shape. It is too early to say to what extent the propositions might apply to different DMCs that are experiencing different degrees of public sector austerity. Some selective contemplation leads to the following observations.
First, it probably will not be true that social sector spending in general and education in particular will experience disproportionate reductions in funding. The opposite is at least as likely since most expenditure is salary recurrent, and strong effective demand for education is likely to remain and influence political decision making. Second, the proportion of salary-recurrent expenditure is likely to rise, capital spending will be truncated, and nonsalary support (learning materials etc.) could be squeezed to levels that damage quality and achievement. Third, higher education lobbies may be more successful at protecting their interests than those defending primary school budgets. But what happens to higher education investment may depend more on developments associated with its globalization, alternative (and cheaper) delivery modes, and levels of cost recovery. Fourth, informal education programs will probably experience reduced support from public funds. Fifth, if recession persists it is almost inevitable that the real value of teachers’ salaries will decline with possible consequences for commitment and performance. Sixth, cost recovery will appear more attractive but disposable incomes will be falling. Some imagination will be needed to devise feasible methods of recovering costs in equitable and efficient ways against this background (Lewin 1994). Seventh, external support may become virtually the only source of funding for developmental initiatives in the poorest countries. It may need to be directed toward phased recurrent support where, without this assistance, infrastructure will collapse to the disadvantage of the most educationally marginalized.

In reality, choices between policy options within the education sector will be made that reflect national priorities, historic preferences, expectations about the future, and responses to changing exogenous circumstances. Since these all vary between DMCs, so also will the policies adopted. No one set will be universally appropriate or feasible. No one method can be identified that would allow common criteria to be applied to the problem of choosing between options directed toward similar ends in different DMCs. However, if there is some consensus that the purposes of public investment in education is to promote economic growth, improve equity in access to basic education services, enhance quality and internal efficiency, and respond to emerging needs, the analysis in this paper leads to the identification of several areas for policy interventions, which may well resonate across groups of DMCs with similar developmental circumstances.

First, in those countries where spending is low as a proportion of GNP per capita and of the public budget compared to other DMCs, increased allocations may be needed (Colclough with Lewin 1993). This will be especially the case where what is currently delivered is manifestly inadequate. This option is not independent of patterns of investment—increasing spending in already inefficient systems has few attractions unless the underlying sources of inefficiency are addressed. Where much less than 3 percent of GNP per capita is allocated some reconsideration would seem desirable.
Second, in those DMCs where primary enrollment rates are significantly below 100 percent, especially where literacy is also low and gender differences large, investment at primary should be a priority within the education sector. The benefits for equity and economic development should be considerable. This is likely to be the most cost-effective way to improve adult literacy in the medium term, and one of the easiest ways to reduce gender inequity.

Third, internal efficiency needs improvement both to extend the resources available to make increased access affordable, and to ensure better distribution of participation and achievement of valued outcomes. Unequal investment that arises from wide differences in actual resource allocation (uneven teacher deployment and utilization, within-school preferences for spending on higher grades, heavy subsidy of some institutions and levels at the expense of others) is likely to suppress retention and on-schedule graduation rates, increase repetition, and enhance social selectivity and regressive subsidy related to household incomes. Initiatives that decentralize control and finance may have a role to play in increasing efficiency and engaging the energies of stakeholders to improve quality and relevance; they appear unlikely to be sufficient to achieve this unless accompanied by appropriate checks and balances that encourage desired outcomes and monitor effects. Decentralization may be least attractive where infrastructure is weakest and incomes lowest.

Fourth, more effective management, administration and monitoring, and steps to reverse regressive subsidies can help provide better value for money and contribute to equity. Where it can be demonstrated that new incentive structures would work to improve quality without adverse effects that compromise their value, these should be incorporated into management systems.

Fifth, the public costs of secondary schooling should be limited to a small multiplier of those for primary unless there are strong contraindications. In those countries where primary schooling is not universalized, high secondary unit costs may represent a poor allocation choice unless restricted to a small number of schools with open and fair selection. Where primary schooling of acceptable quality is becoming widely available, access to and financing of secondary schooling will become a dominant policy issue.

Sixth, higher education policy should encourage more cost recovery from those who benefit. This appears the most plausible mechanism for expanding access in the face of growing demand without conceding growing public subsidy to those most likely to enjoy above-average incomes subsequently. How this is implemented must be context-sensitive since in the poorer DMCs scope may be extremely limited and some possible mechanisms could result in counterproductive outcomes. Cross border trading of educational services at the tertiary level is likely to grow rapidly and may begin to have consequences for national institutions that become uncompetitive in terms of cost and quality with institutions in other countries in the region and outside.
Seventh, education systems should be encouraged to respond to the changing characteristics of labor markets, in which there is an increasing proportion of service and manufacturing sector jobs. As these jobs become more knowledge and skill-intensive, curricula, especially at the secondary level and above, need adaptation and redesign to promote outcomes valued in the market place. Inherited curricula traditions need to be questioned to establish if they meet new needs and opportunities, and to balance domestic priorities for learning with those derived from educational development at an international level.

Eighth, nongovernment organizations and private support for education should be encouraged. The first condition is that whatever steps are taken should not diminish the responsibilities of governments to provide adequate basic education to all. Secondly private institutions should have to satisfy minimum conditions of physical provision, teacher competence, financial probity, and effective learning. The range of possibilities is large and illustrated by the success that some DMCs have had in mobilizing nongovernment support for education.

What is possible and appropriate will be mediated by the exigencies of national context and political reality. In the short term, in those countries suffering most from recession, the public resources available to improve access and quality in education will be unusually constrained. Some or all of the seven features of planning in austerity identified above in this paper will apply. Which effects will be dominant will depend on the extent to which educational investment is protected from short-term shocks, the profile of policy options preferred as a strategic response to budget reductions, and the depth and persistence of economic downturns. When growth returns, increased effective demand for universal access, higher quality and more relevant curricula, and more flexible delivery systems at higher levels will reshape educational futures that build on the achievements of the past and respond to new needs. This will be easiest in those countries with the most well-resourced and resilient educational infrastructure. The major challenge is to ensure that those education systems that are most vulnerable to the short-term effects of recession are assisted in their attempts to minimize adverse consequences and preserve the base from which to build.
Bibliography


Competitiveness and Human Resource Development in Asia
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Abstract. Rapid growth in a number of East Asian economies over the last three decades has been facilitated by an effective strategy of human resource development. The principal element of this strategy has been to provide basic education and health to a wider segment of society. This strategy helped these countries achieve rapid growth through labor-intensive manufacturing on one hand, and ensure equitable distribution in society on the other. However, these countries are confronted with new human resource challenges as they attempt to make the transition to the next stage of development. As this paper points out, many of East Asia’s rapidly growing economies have paid inadequate attention to higher education and technological capability among their people. The paper identifies specific areas in which human resource development remains weak in developing Asia and suggests strategies and policies to overcome them.

Introduction

Developing Asia has experienced massive economic transformation in the last 30 years. During this period Asia has emerged as the fastest growing region in the world and closed its economic gap with the industrial countries.¹ A combination of factors accounts for this dramatic transformation of much of the Asian economy, now widely referred to as the Asian miracle. These factors, on which there is wide consensus, include stable macroeconomic

¹Between 1965 and 1990, gross domestic product (GDP) in Asia grew by an average annual rate of 3.8 percent per person, compared with the industrial countries' average annual growth rate of 2.7 percent per person. The newly industrialized economies (NIEs) grew even faster, at a rate of 6.7 percent per person (Asian Development Bank 1997).


policies, openness to trade, high saving rates, generally sound institutional frameworks, high literacy rates, and favorable demographic characteristics. However, not all of developing Asia share these characteristics, nor have all of developing Asia been part of the Asian miracle in the same manner as East Asia has been. Indeed, the miracle largely bypassed some parts of Asia, such as South Asia and the Philippines. However, things have started to change for these economies. Since 1990 South Asian countries have undertaken significant reforms of their policy frameworks and laid strong economic foundations for growth. The Philippines has also made significant improvements in its policy and institutional framework, which has been accompanied by greatly improved economic performance. The great convergence toward market-based, outward-oriented economic policies throughout developing Asia in the last few years has been remarkable.

Nevertheless, despite improvements in policies and institutions, many of Asia’s high-performing economies seem to be facing a serious challenge to their economic growth as a result of the ongoing financial turmoil. To most observers, this turmoil reflects structural problems such as institutional frailties in the financial sector and weaknesses in its systems of corporate governance. It is believed that once these issues begin to be dealt with—and this will not be an easy nor quick task—growth will resume.

However, the challenge to a resumption of “miracle” growth rates may appear from other sources. In particular, gaps in human skills and in technological capabilities may be the main binding constraints on future growth. That this is not a mere theoretical possibility is suggested by the main precursor to the financial crisis: the export deceleration of 1996 that arguably was the trigger for the ensuing crisis (Asian Development Bank 1998). Much of that deceleration in exports may well have been cyclical, for example, caused by the downturn in demand for electronic products. But a more worrying possibility, at least for the Southeast Asian tigers, is that the lack of an adequate supply of well-trained technicians, engineers, and scientists constrained the ability of these economies to move from simple assembly-line operations in foreign-built plants, toward designing and developing products in the face of competition from lower-wage economies such as the People’s Republic of China (PRC) and Viet Nam.

For the other more advanced economies of East Asia, it has been asserted that they are fast approaching the end of growth attainable through input mobilization (Krugman 1994). Further acceleration of growth would require technological progress attainable through new innovations that stem from a sophisticated endowment of human capital, which is absent in these economies.

These occurrences have raised concerns in many quarters. Is this the end of the Asian miracle? While the full answer to this question is beyond the scope of this paper, it addresses the issue in terms of those aspects of human resource development related to knowledge and skills. This perspective is important, because ultimately it is
the quality of human resources in terms of people’s knowledge and skills that constitutes the basic foundation on which economic miracles are built. This is the critical determinant of the structure of production, competitiveness, and technological and managerial innovations. It is also a determinant of whether a country can move up the economic ladder from one stage of economic development to another.

This is not to downplay the policies that played a critical role in the economic transformation of developing Asia. Indeed, one only has to look at the disappointing growth experience of the ex-communist economies to realize that investing in education alone is not a magic formula that will solve the problems of economic growth. Policies and institutions matter a great deal. As Murphy, Schleifer, and Vishny (1991) have pointed out, talent and education are drawn toward entrepreneurial activities when policies and institutions allow people to organize firms with ease and retain their profits. Conversely, when policies and institutions encourage rent-seeking activities, the talented and educated are drawn to these. Given the trend toward convergence of policies and institutional framework in much of Asia (a trend that no doubt will be hastened by the recent financial crisis and policy responses emerging therefrom) the quality of the workforce will largely determine the differences in performance across its economies in the future.

There is another reason why the returns from investing in human resources will be critical for future prosperity even if they have not always been so in the past. This reason is closely related to a point made by Schultz (1975) about the value of education in dealing with disequilibria—or changes in economic conditions—and which is clearest in agrarian contexts. According to Schultz, in an environment where agricultural practices were technologically stagnant, farmers’ education would not do much in terms of raising production. However, when exposed to new technologies and practices, it is the educated farmers who can translate the new technology into production increases most effectively. This point applies equally well to other sectors of the economy including manufacturing and services. It also takes on an added force given the inexorable forces of globalization. Globalization has increased technology flows from developed to developing countries. As in the case of Schultz’s farmer, it is the well educated who are in a position to gain the most from the introduction of new technology.

The remainder of this paper is organized as follows. First, it makes clearer the relationship between investments in human resources and economic growth. Next, it describes broad trends in various dimensions of human resources as they relate to knowledge and skills in the Asian economies before highlighting some of the lacunas that currently exist in Asia’s investments in its human resources and its technological capabilities. The final sections describe broad strategies for developing human resources and technological capabilities. These strategies are sensitive to the considerable variation that exists among Asian developing economies (ADEs) in their levels of development, human resources, and technological capabilities.
The Importance of Human Resource Development to Growth

In order to improve its standard of living, an economy must produce greater amounts of goods and services per worker. In other words, it must ensure that the productivity of its workers increases. This may be achieved by equipping workers with more tools, that is, investing in physical capital, but may also be achieved by investing in human capital to improve the quality of human resources. In fact, a strategy based only on accumulation of physical capital will soon run into diminishing returns (Krugman 1994). For all practical purposes, it is only technological progress that can allow sustained growth of output per worker. Additionally, contrary to what many early economic growth models assumed for simplicity (for example, Solow 1956, 1957), technological progress does not fall like “manna from heaven”. Instead, it is the outcome of human endeavor and depends critically on the quality of human resources. Even when technology does appear to fall like manna from heaven, as may be the case with technological latecomers, adopting successfully the new technology developed elsewhere is no easy task. It is ultimately tied to the quality of human resources once again.

Investing in human capital to augment the quality of human resources can take many forms. Perhaps the most basic of these are investments in people’s health. Research conducted in a variety of developing countries has confirmed that the adverse effects on productivity of poor health and nutrition—as reflected in inadequate calorie intake, low weight-for-height, or low body mass—are considerable (for example, Strauss 1986, Deolalikar 1988, etc.). Moreover, it is not just the ability to carry out strenuous work that suffers. Inadequate nutrition, especially when measured in terms of low height-for-age among children, has long-term and lasting adverse effects on cognitive development and schooling achievements (Jamison 1986, Moock and Leslie 1986). These are likely to lead to lower labor productivity in adulthood.

While the productivity effects of nutrition and health are strongest at low levels of nutrition and income, they level off at higher income and nutrition levels (Strauss 1986). Further improvements in productivity can only be sustained if workers possess the knowledge and skills required not only to utilize given tools and technology effectively, but also to generate and manage new tools and technology. Workers accumulate this technological capability in myriad ways. On-the-job training and learning are important, as are research and development (R&D) activities that are undertaken precisely for the purpose of developing new technologies or utilizing effectively those developed elsewhere. However, it is no exaggeration to say that formal education is the key building block of technological capability.

To what extent is worker productivity associated with education? It is difficult to deny that schooling yields important pecuniary returns to individuals in the form of higher earnings. These returns can be relatively large in developing countries and
some estimates indicate private rates of return to schooling in Asia to be as high as 31 percent (see Psacharopoulos 1988 for a survey of various estimates). It is, of course, possible that only a small part of these returns reflects the productivity-enhancing effect of education. The rest could reflect the importance of credentials in higher paying jobs or education as a screening device that allows employers to distinguish between high-ability and low-ability individuals, because high-ability individuals will go through school more easily than low-ability individuals (for example, Spence 1976).

However, carefully conducted research in both developed as well as developing countries has demonstrated that the effects of schooling on wages works primarily through its positive impact on cognitive achievements (for example, Alderman et al. 1996, Ashenfelter and Krueger 1994, etc.). Moreover, in addition to enabling workers to do everyday tasks more efficiently, education, even of the basic kind, is found to facilitate the adoption of new tools and technologies, indicating that the returns to education are not a given constant as argued by Schultz (1975). Instead they vary with the context and would be higher in a setting where technology changes rapidly.

A recent study uses India’s experience with the green revolution to shed light on this issue (Foster and Rosenzweig 1996). Using data on rural households, farming inputs, and crop yields, Foster and Rosenzweig find that while farmers with a primary education were in general more productive than their uneducated counterparts, the productivity differential was greatest in those regions that were especially conducive to the cultivation of the new high-yielding varieties of seeds. In these regions educated farmers’ profits grew to be as much as 46 percent more than those of uneducated farmers. The findings strongly suggest that the benefits of education are largest in the context of changing circumstances. The introduction of the new high-yielding varieties of seeds represented a new technology and it was the educated who responded best to the new technology.

Supportive evidence comes from research using industrial data from three developing economies including Taipei, China (Tan and Batra 1997). The results of this research indicate that while firms’ investments in activities to enhance workers’ knowledge, such as training programs, lead to higher wages and productivity for both skilled (typically well-educated) and unskilled labor, the gains made by skilled workers are much larger. For example, the results for the firms in Taipei, China indicated that skilled workers in firms that invest in training see, on average, a 54 percent wage premium over similar workers in firms that do not invest in training. Meanwhile, unskilled workers in the investing firms see, on average, only a 15 percent wage premium over their counterparts in noninvesting firms. Moreover, the results also revealed that training skilled workers leads to large gains in productivity, while training unskilled workers led to significantly smaller gains.

In addition to this micro-level evidence, some recent evidence using cross-country data also points to the dependence of returns to education on an economy’s
context. There exists a number of empirical studies that use enrollment rate data as proxies for growth in human capital and find the accumulation of human capital to be important to economic growth in cross-country growth regressions.\(^2\) One twist to these studies is provided by Mingat and Tan (1996) who separate countries into three groups: low, middle, and high income. Their results suggest that the benefits by level of education are sensitive to countries’ economic circumstances. In particular, whereas the typical low-income country would benefit most by expanding its coverage of primary education, middle and high-income countries would benefit most by expanding their coverage of secondary and tertiary education, respectively. As Mingat and Tan point out, the simplicity of production technology, economic processes, and commercial and legal institutions, including the limited scope for specialization of labor in low-income countries relative to higher-income ones, could explain why expanding the supply of highly educated people in these economies may not have too much impact on economic growth. By contrast, for more developed countries that are at or near the frontiers of technology, sustaining growth comes from developing new technologies and refining older ones. And in this it is practically impossible to deny the key role higher education plays in enabling activities, such as R&D, which are undertaken precisely to push forward the frontiers of technology and knowledge.

However, higher education and the technological capability it instills in a workforce can be of benefit to developing economies also.\(^3\) This can be seen by examining the returns to activities such as R&D, which are intensive in their use of highly educated individuals. In general, investigators have looked most closely at the economic benefits to developing countries from R&D activities in the field of agriculture. In this context, the evidence from public sector agricultural research programs in Asia suggests that the internal rates of return to R&D activity have been on average 56 percent (see the survey by Evenson and Westphal 1995). Few estimates of the rate of return for industrial R&D in the developing world exist. Those that do tend to be based on studies that have used data from private Indian manufacturing firms and report returns in the range of 25 to 80 percent (Deolalikar and Roller 1989, Basant and Fikkert 1996, Hasan 1997).

The paucity of studies of industrial R&D in the ADEs should not be taken as an indication of its general lack of relevance to these economies. R&D can be of many types, and it is important to distinguish between R&D geared toward extending the frontiers of technical knowledge, and R&D geared toward adapting and assimilating technologies developed elsewhere, typically in the industrial world. For the ADEs, it

\(^2\) The use of enrollment rates as a proxy for growth in human capital is not without its critics, however. See, for example, Pritchett (1996).

\(^3\) In this context, Khan (1998a, b) has developed the interesting concept of a positive feedback loop innovation system (POLIS). According to this view, R&D and human resource development are complements in a production function for innovative activities. Both are necessary if innovation is to go on. For NIEs in particular these complementarities are of particular significance.
is the latter type that is more relevant at this point in time. Contrary to some popular beliefs, this type of R&D is far from costless or trivial in its implications. Such R&D has enabled firms in the ADEs not only to use imported equipment and technology more effectively, it has also facilitated the acquisition of technology from foreign firms on more economic terms (Deolalikar and Evenson 1989).

More impressively, adaptive and applied R&D in ADE firms has also enabled them to modify technologies that they had previously imported and to export it successfully on the basis of their modifications. The technological capability to do this is fundamentally important in creating new bases of comparative advantage. While emphasizing industrial R&D and technology development may not be critical for building a solid base in the production and export of low value-added, low technology goods, it is critical for building a complex industrial structure and shifting production to higher value-added goods.

How Much is Developing Asia Investing in Education and Technology?

In the absence of adequate investment in human resources, the ADEs would be seriously hindered in their efforts to sustain economic growth in an increasingly competitive and integrated world. In this section, we examine the state of literacy, education, and some broad indicators related to technology development and technological capability among the ADEs. The section then discusses what the latter indicators suggest for these economies’ long-run growth prospects in the light of recent economic developments.

Literacy, Education, and Technology Development

One rough but ready measure of the stock of human capital is the literacy of the adult population. As an examination of adult literacy rates across selected ADEs in Table 1 reveals, typically more than 80 percent of the adult populations of East and Southeast Asian economies are literate. This is in sharp contrast to many South Asian economies that still have literacy rates below 50, if not 40 percent! Of course, it is true that these South Asian economies (Bangladesh, India, Nepal, and Pakistan) have shown much improvement over the last 30 years. However, some of the most impressive improvements in adult literacy have taken place in Southeast Asia. For example, whereas Indonesia had a literacy rate that was around 11 percentage points higher than that of India in 1961, the gap between the two had increased to about 32 percentage points by 1995.
Table 1: Adult Literacy Rates, Selected Asian Economies

<table>
<thead>
<tr>
<th>Economy</th>
<th>1960</th>
<th>1995</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NIEs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>70</td>
<td>92</td>
</tr>
<tr>
<td>Korea, Rep. of</td>
<td>71</td>
<td>98</td>
</tr>
<tr>
<td>Singapore</td>
<td>n.a.</td>
<td>91</td>
</tr>
<tr>
<td>Taipei, China</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td><strong>PRC</strong></td>
<td></td>
<td>82</td>
</tr>
<tr>
<td><strong>ASEAN-4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>39(^a)</td>
<td>84</td>
</tr>
<tr>
<td>Malaysia</td>
<td>n.a.</td>
<td>84</td>
</tr>
<tr>
<td>Philippines</td>
<td>72</td>
<td>95</td>
</tr>
<tr>
<td>Thailand</td>
<td>68</td>
<td>94</td>
</tr>
<tr>
<td><strong>Other Southeast Asia</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cambodia</td>
<td>36(^b)</td>
<td>n.a.</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>28(^d)</td>
<td>57</td>
</tr>
<tr>
<td>Myanmar</td>
<td>n.a.</td>
<td>83</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>n.a.</td>
<td>94</td>
</tr>
<tr>
<td><strong>South Asia</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bangladesh</td>
<td>22(^e)</td>
<td>38</td>
</tr>
<tr>
<td>India</td>
<td>28(^e)</td>
<td>52</td>
</tr>
<tr>
<td>Nepal</td>
<td>9(^f)</td>
<td>28</td>
</tr>
<tr>
<td>Pakistan</td>
<td>15(^g)</td>
<td>38</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>75(^c)</td>
<td>90</td>
</tr>
</tbody>
</table>

Notes: \(^a\) 1961
\(^b\)1962
\(^c\)1963
n.a. = not available.


It is true that over time and with the increasing coverage of basic education in all of these economies (see below), the fraction of the adult populations that are illiterate will decline substantially. However, the large illiterate populations in South Asia are likely to continue to act as a drag on their economies for some time to come unless programs designed to target adult illiteracy are introduced in a big way.

What of Asia’s investments in human capital? Despite a number of problems, enrollment rates\(^4\) at various levels of schooling—i.e., the number of students enrolled in education at a particular level divided by the population in the age range

\(^4\)For example, enrollment rates are typically based on annual enrollment surveys conducted at the beginning of the school year. If dropping out of school in the course of the academic year is significant, then the reported enrollment rates will overstate effective enrollment rates. See Behrman and Schneider (1994) for a more complete discussion of the limitations of enrollment data.
corresponding to that educational level—do provide a measure of the investments being made in human capital. They can also be used as an approximate measure of education outcomes and can be useful in highlighting various broad features regarding education. Indeed, a comparison of gross enrollment rates across the selected ADEs reveals a number of interesting features.

Consider, first, Table 2 on enrollment rates in primary education. The table reveals that as in the case of adult literacy, many East and Southeast Asian economies have been quite successful historically in the provision of primary education especially in comparison to perhaps all South Asian economies with the exception of Sri Lanka. However, there has been a rapid improvement in the provision of primary education in South Asian economies (plus such Southeast Asian laggards such as Laos). As a result, the dispersion of enrollment rates among Asian economies is much less today than it was three decades ago.

<table>
<thead>
<tr>
<th>Economy</th>
<th>1960</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIEs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>91</td>
<td>102</td>
</tr>
<tr>
<td>Korea, Rep. of</td>
<td>94</td>
<td>103</td>
</tr>
<tr>
<td>Singapore</td>
<td>112</td>
<td>107</td>
</tr>
<tr>
<td>Taipei, China</td>
<td>97</td>
<td>100</td>
</tr>
<tr>
<td>PRC</td>
<td>58</td>
<td>120</td>
</tr>
<tr>
<td>ASEAN-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>60</td>
<td>114</td>
</tr>
<tr>
<td>Malaysia</td>
<td>74</td>
<td>93</td>
</tr>
<tr>
<td>Philippines</td>
<td>91</td>
<td>112</td>
</tr>
<tr>
<td>Thailand</td>
<td>83</td>
<td>97</td>
</tr>
<tr>
<td>Other Southeast Asia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cambodia</td>
<td>64</td>
<td>109</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>25</td>
<td>104</td>
</tr>
<tr>
<td>Myanmar</td>
<td>56</td>
<td>105</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>n.a.</td>
<td>101</td>
</tr>
<tr>
<td>South Asia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bangladesh</td>
<td>47</td>
<td>79</td>
</tr>
<tr>
<td>India</td>
<td>42</td>
<td>101</td>
</tr>
<tr>
<td>Nepal</td>
<td>10</td>
<td>109</td>
</tr>
<tr>
<td>Pakistan</td>
<td>33</td>
<td>48</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>95</td>
<td>105</td>
</tr>
</tbody>
</table>

Note: n.a. = not available.
Nevertheless, a more careful look beyond the enrollment rates reveals that access to a decent primary education is a serious problem in the low-income economies of Asia, especially in South Asia and some economies of Indo-China. First, access by children across income groups and gender in these economies can vary greatly. For instance, in Cambodia and Laos, the gross primary school enrollment rate for children from the wealthiest 20 percent of families is, respectively, 35 and 43 percent greater than that for the poorest 20 percent (Deolalikar 1997). Similarly, in India the gross primary school enrollment rate of girls is only 80 percent that of boys, while in Pakistan the figure is only 50 percent (Deolalikar 1997).

Second, enrollment rates do not tell us too much about the quality of education being provided. Direct measures of quality of education, such as performance on standardized test scores, are hard to come by. Nevertheless, there are a number of indirect measures of the quality of education. One manner in which low quality can manifest itself is through high rates of dropout and grade repetition. Although high rates of dropout could reflect the perceived lack of relevance of education, especially in rural areas, there is evidence to suggest that poor quality of schooling can lead students (prompted by their parents) to drop out (Dreze and Gazdar 1997, Hanushek 1995). The problem of dropping out seems particularly acute for South Asian economies such as Bangladesh, India, Nepal, and Pakistan and for some of the Indo-China countries such as Laos and Cambodia (Chuard and Mingat 1996, Deolalikar 1997, Tan and Mingat 1992). For example, the evidence suggests that of the cohort of children who enter primary school in low-income ADEs such as Bangladesh, Laos, Nepal, and Pakistan, only about half complete sixth grade (Deolalikar 1997). Moreover, in some of these countries, about a quarter of all children repeat a grade and, as a consequence, some children spend two to four years longer in primary school than normal.

Consider next enrollment rates across the ADEs at the secondary level of education (Table 3). As is the case for primary education, these enrollment rates do not capture issues relating to quality. Nor do they describe to us the related problems of high dropout rates, grade repetition, and gender and income biases. Nevertheless, as rough measures of the investments in education, these do reveal some interesting features. First, the cross-country variation in enrollment rates is much greater at the secondary level than at the primary level. For example, while Bangladesh had a gross secondary enrollment rate of 20 percent in 1992, Korea’s enrollment rate was 90 percent. Second, the enrollment rates in secondary education in some of Asia’s higher-performing economies seem inadequate, particularly given their higher income levels.
Table 3: **Gross Secondary Enrollment Rates, Selected Asian Economies**

<table>
<thead>
<tr>
<th>Economy</th>
<th>1960</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIEs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>30</td>
<td>n.a.</td>
</tr>
<tr>
<td>Korea, Rep. of</td>
<td>27</td>
<td>90</td>
</tr>
<tr>
<td>Singapore</td>
<td>32</td>
<td>70</td>
</tr>
<tr>
<td>Taipei, China</td>
<td>29</td>
<td>88</td>
</tr>
<tr>
<td>PRC</td>
<td>18</td>
<td>54</td>
</tr>
<tr>
<td>ASEAN-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>6</td>
<td>43</td>
</tr>
<tr>
<td>Malaysia</td>
<td>17</td>
<td>60</td>
</tr>
<tr>
<td>Philippines</td>
<td>26</td>
<td>76</td>
</tr>
<tr>
<td>Thailand</td>
<td>12</td>
<td>36</td>
</tr>
<tr>
<td>Other Southeast Asia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cambodia</td>
<td>3</td>
<td>n.a.</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>Myanmar</td>
<td>10</td>
<td>23</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>51</td>
<td>32</td>
</tr>
<tr>
<td>South Asia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bangladesh</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>India</td>
<td>10</td>
<td>49</td>
</tr>
<tr>
<td>Nepal</td>
<td>6</td>
<td>35</td>
</tr>
<tr>
<td>Pakistan</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>27</td>
<td>86</td>
</tr>
</tbody>
</table>

Note: n.a. = not available.
Source: UNESCO database.

This can be seen most clearly by comparing actual enrollment data at the secondary level alongside those predicted by each country’s level of development as proxied by their income levels as in Figure 1. As may be expected, countries with higher per capita incomes also tend to have higher enrollment rates although, as the figures make clear, the relationship is by no means a watertight one. The surprising feature, however, is the large and negative differences between actual and predicted enrollment rates for such high-performing economies as Hong Kong, China; Malaysia; Singapore; and Thailand at the secondary level. Whereas

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5 The predicted values were obtained from cross-country regressions based on 121 countries. The dependent variable is gross enrollment rate at the secondary level and the independent variables include an intercept and a polynomial in per capita income. Series A denotes the predicted enrollment rates from a quadratic form in per capita income while series B denotes those from a cubic form in per capita income. Data is from *World Development Indicators* (World Bank 1998).
Hong Kong, China and Singapore may be classified as high-income economies, Malaysia and Thailand can be classified as middle-income economies. Thus, in view of the findings pointed out in the second section that the contribution of education varies by context and that higher-income economies are more likely to have an economic structure that demands a higher proportion of better educated individuals than lower-income economies, the relatively low secondary enrollment rates in several of the higher income economies of Asia is some cause for concern.

Figure 1: Actual and Predicted Enrollment Ratios (Secondary Education)
Finally, consider enrollment rates at the tertiary level of education (Table 4). As may be expected, the enrollment rates for the more developed newly industrialized economies or NIEs (Hong Kong, China; Korea, Singapore, and Taipei, China) are higher than those of other ADEs with the exception of the Philippines. However, given that the future growth prospect of the NIEs is probably most critically dependent on education at the highest levels, the large and negative differences between actual and predicted enrollment rates depicted in Figure 2 for Hong Kong, China and Singapore do not bode well.6

Table 4: Gross Tertiary Enrollment Rates, Selected Asian Economies

<table>
<thead>
<tr>
<th>Economy</th>
<th>1960</th>
<th>1990</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIEs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Korea, Rep. of</td>
<td>4</td>
<td>42</td>
</tr>
<tr>
<td>Singapore</td>
<td>6</td>
<td>22</td>
</tr>
<tr>
<td>Taipei, China</td>
<td>4</td>
<td>21</td>
</tr>
<tr>
<td>PRC</td>
<td>a</td>
<td>2</td>
</tr>
<tr>
<td>ASEAN-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Philippines</td>
<td>12</td>
<td>27</td>
</tr>
<tr>
<td>Thailand</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td>Other Southeast Asia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lao PDR</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Myanmar</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>n.a.</td>
<td>2</td>
</tr>
<tr>
<td>South Asia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bangladesh</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>India</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Nepal</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Pakistan</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>1</td>
<td>9</td>
</tr>
</tbody>
</table>

Notes: a = below one percent.

n.a. = not available.


---

6The predicted values were obtained from cross-country regressions based on 109 countries. The dependent variable is gross enrollment rate at the tertiary level and the independent variables include an intercept and a polynomial in per capita income. Series A denotes the predicted enrollment rates from a quadratic form in per capita income while series B denotes those from a cubic form in per capita income. Data is from World Development Indicators (World Bank 1998).
Unlike basic education, which entails development of basic skills relating to literacy and numeracy, higher education, especially tertiary education, prepares students for more specialized occupations and thereby varies by field of study. For the purposes of developing technological capability, higher education in the natural and applied scientific fields is an obvious necessity. Table 5 presents the enrollments in these fields as a proportion of total tertiary enrollment. An interesting feature of this table is the similarity in this proportion across the more dynamic Southeast Asian economies and the lagging economies of South Asia. Indeed, the relatively low proportions in the scientific fields in these economies relative to the dynamic NIEs is
consistent with the finding that Korea and Singapore have around ten times as many R&D scientists and technicians per capita as the other countries in the region and are comparable to the industrial economies in this regard (Table 6).

Table 5. Enrollment in Natural and Applied Science in Selected Asian Economies, 1992

<table>
<thead>
<tr>
<th>Economy</th>
<th>Percent Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIEs</td>
<td></td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>35</td>
</tr>
<tr>
<td>Korea, Rep. of</td>
<td>40</td>
</tr>
<tr>
<td>Singapore</td>
<td>n.a.</td>
</tr>
<tr>
<td>Taipei, China</td>
<td>n.a.</td>
</tr>
<tr>
<td>PRC</td>
<td>47</td>
</tr>
<tr>
<td>ASEAN-4</td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>22</td>
</tr>
<tr>
<td>Malaysia</td>
<td>27</td>
</tr>
<tr>
<td>Philippines</td>
<td>26</td>
</tr>
<tr>
<td>Thailand</td>
<td>19</td>
</tr>
<tr>
<td>Other Southeast Asia</td>
<td></td>
</tr>
<tr>
<td>Lao PDR</td>
<td>45</td>
</tr>
<tr>
<td>Myanmar</td>
<td>n.a.</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>n.a.</td>
</tr>
<tr>
<td>South Asia</td>
<td></td>
</tr>
<tr>
<td>Bangladesh</td>
<td>25</td>
</tr>
<tr>
<td>India</td>
<td>26</td>
</tr>
<tr>
<td>Nepal</td>
<td>14</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>34</td>
</tr>
</tbody>
</table>

Note: n.a. = not available.
Source: UNESCO database.

Table 6 also displays R&D spending as a percentage of GNP for the same cross section of countries. As is the case with the R&D personnel numbers, the data reveal that the more dynamic Southeast Asian economies do not invest as much in technology-related activities as would be suggested by their higher incomes. For example, R&D expenditures in Indonesia, Malaysia, Philippines, and Thailand are much less than those of India or Pakistan.
Table 6. Status of Research and Development Capabilities, 
Selected Economies and Years

<table>
<thead>
<tr>
<th>Economy</th>
<th>R&amp;D Scientists and Technicians per 1,000 Persons</th>
<th>R&amp;D Expenditure as a Percentage of GNP</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIEs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>2.6</td>
<td>2.8</td>
</tr>
<tr>
<td>Korea, Rep. of</td>
<td>2.2</td>
<td>1.1</td>
</tr>
<tr>
<td>Singapore</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taipei, China</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>PRC</td>
<td>0.3</td>
<td>0.6</td>
</tr>
<tr>
<td>ASEAN-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Malaysia</td>
<td>0.1</td>
<td>0.4</td>
</tr>
<tr>
<td>Philippines</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Thailand</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Other Southeast Asia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lao PDR</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Myanmar</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>South Asia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>0.1</td>
<td>0.8</td>
</tr>
<tr>
<td>Pakistan</td>
<td>0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Advanced Economies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>2</td>
<td>1.45</td>
</tr>
<tr>
<td>France</td>
<td>3</td>
<td>2.38</td>
</tr>
<tr>
<td>Germany</td>
<td>3</td>
<td>2.37</td>
</tr>
<tr>
<td>Japan</td>
<td>6</td>
<td>2.88</td>
</tr>
<tr>
<td>United States</td>
<td>4</td>
<td>2.44</td>
</tr>
</tbody>
</table>

Note: n.a. = not available.

The Importance of Developing Technological Capability

This section has so far presented some broad indicators of education and technology development in the ADEs. Accepting as broadly correct the notion that the human resources required for economic growth depend on the economic context, the section has pointed to deficiencies in basic education among the low-income ADEs and deficiencies in higher education and technology development among many higher-income ADEs as a potential bottleneck to economic growth. While the
importance of basic education as a foundation for economic growth is almost universally acknowledged, what is less appreciated are the critical linkages between higher education and technological capability and economic growth in the context of economic development. For example, the *East Asian Miracle* (World Bank 1993) emphasizes the important role of education, particularly basic, in promoting growth in the Asia’s high-performing economies. While it also emphasizes the importance of technology in promoting that growth, the report essentially focuses on technology acquired through trade (through foreign direct investment, import of capital goods embodying foreign technology, licensing agreements, foreign training, etc.). Therefore, maintaining openness to foreign technology emerges as the key lesson.

While it is true that foreign technology represents an important opportunity that the ADEs must exploit, it is equally true that the ADEs ignore the development of local technological capabilities at their own peril. Indeed, recent trends in some Southeast Asian economies suggest how important local technological capability can be in sustaining growth. We now consider these trends.

The economic growth experience of Asia’s high-performing economies has often been described in terms of the metaphor of the “flying geese”. According to this metaphor, as Japan, the most technologically advanced country in Asia, moved away from being an exporter of labor-intensive manufactured goods such as textiles to more high-technology products, the NIEs took its place. Similarly, as the latter set of countries developed more skill-intensive exports, other Asian countries, essentially Southeast Asian ones, stepped in to fill the vacancy.

At first glance, an economy such as Thailand would seem to be a good example of this process, but a more careful examination suggests that there is cause for concern about its future exports, and hence, growth performance. Certainly, Thailand follows the pattern in that it has shown a marked increase in the proportion of its total manufactured exports, from 32 percent in 1980 to 80 percent in 1995, with a consequent decline in the share of agricultural exports. Moreover, manufactured exports have shifted away from labor-intensive products to products classified as medium to high technology, so that by 1993 the latter exceeded the former. In 1995-1996 the growth of exports fell well below the average for the preceding four years, but the medium to high-technology products performed relatively less badly than the other categories.

Why then is there cause for concern? The problem is that the decline in the growth of Thailand’s low-technology exports has come from increasing competition from the low-wage economies of Bangladesh, PRC, India, and Viet Nam. As the examination of wage rates across ADEs in Table 7 suggests (adapted from Lall 1998), economies such as Bangladesh, PRC, India, and Sri Lanka have an advantage over such ADEs as Malaysia, Philippines, and Thailand in the manufacture of unskilled and semiskilled labor-intensive products. This makes it less likely that the latter group of countries can continue to specialize in traditional manufactured exports in
which the primary unit cost advantage stems from low wages, and which have grown as rapidly as they have in the last 10 to 15 years.

Table 7. Annual Wages in Manufacturing (US$), Selected Asian Economies and Years

<table>
<thead>
<tr>
<th>Economy</th>
<th>1970</th>
<th>1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIEs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>n.a.</td>
<td>15,160</td>
</tr>
<tr>
<td>Korea, Rep. of</td>
<td>502</td>
<td>14,295</td>
</tr>
<tr>
<td>Singapore</td>
<td>n.a.</td>
<td>17,794</td>
</tr>
<tr>
<td>Taipei, China</td>
<td>n.a.</td>
<td>14,469</td>
</tr>
<tr>
<td>PRC</td>
<td></td>
<td>340</td>
</tr>
<tr>
<td>ASEAN-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>165</td>
<td>1,001</td>
</tr>
<tr>
<td>Malaysia</td>
<td>707</td>
<td>4,555</td>
</tr>
<tr>
<td>Philippines</td>
<td>651</td>
<td>2,857</td>
</tr>
<tr>
<td>Thailand</td>
<td>n.a.</td>
<td>4,917</td>
</tr>
<tr>
<td>Other Southeast Asia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cambodia</td>
<td>249</td>
<td>n.a.</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Myanmar</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>South Asia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bangladesh</td>
<td>315</td>
<td>1,016</td>
</tr>
<tr>
<td>India</td>
<td>445</td>
<td>1,269</td>
</tr>
<tr>
<td>Pakistan</td>
<td>453</td>
<td>n.a.</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>n.a.</td>
<td>837</td>
</tr>
</tbody>
</table>

Note: n.a. = not available.
Source: UNIDO Industrial Statistics Database.

All of this would not be serious if it were more than compensated for by sustained growth in the medium to high-technology exports. Indeed, it could be said to be highly desirable if it reflected increasing sophistication of Thailand’s industrial base. However, the crux of the problem is that Thailand is essentially acting as an assembly point for these medium to high-technology exports (Lall 1998). Thus while these goods, such as electronics and cars, are classified as medium to high-technology products, they do not involve a highly skilled labor force for that part of their production that actually takes place in Thailand. Hence, Thailand’s production of these exports is likely to come under increasing pressure from the low-wage and unskilled labor economies.
A similar pattern is discernible in the Philippines, where during 1991-1996, electrical and electronic exports increased by 37 percent per year while exports of textiles and garments increased by merely 8.2 percent, the slowest growth rate among all ADEs with the exception of Korea and Taipei, China (World Bank 1997). Unfortunately, electrical and electronics exports of the Philippines have very low value added—a reflection of the fact that the local industry is primarily engaged in the simplest types of assembly and testing activities. For example, the average local content in semiconductors—which accounted for 77 percent of total electronics exports in 1995—is only about 20 percent. By comparison, Taipei, China has achieved an average local content of about 75 percent in the production of semiconductors (World Bank 1997). Moreover, the local content in the electrical and electronics industry has not increased appreciably in the Philippines during the past two decades, indicating low development of technology and technological capability.

If the process of the hollowing-out of the industrial and export base continues, it will spell new difficulties for these economies. Of course, the steep currency devaluations in these economies have given them some breathing space. However, the difficulty is that at the moment, the human resource base to produce those exports where skills are important and that provide a measure of protection from competition from the low-wage, unskilled economies does not exist. While Thailand enjoys almost universal enrollment rates in primary education, its enrollment rates in secondary education remain low and its tertiary education appears to be somewhat biased against basic and applied science. Estimates suggest that Thailand is producing less than two thirds the number of engineers and scientists with undergraduate and graduate degrees that it requires (Lall 1998), and as Table 5 shows Thailand has a lower proportion of tertiary-level students enrolled in natural and applied scientific fields than such low-income ADEs as Bangladesh and India.

Limited local technological capability can also be gleaned from the fact that while Thailand purchases a large amount of technology—as indicated by its payments for foreign patents, copyrights, industrial processes, trademarks, and so on—it receives disproportionately smaller payments from foreigners for the use of its intellectual property than a much lower-income ADE such as Pakistan: In 1995 Thailand paid $630 million, but received only $1 million, compared with Pakistan’s payment of $12 million and receipt of $2 million (World Development Indicators 1997).

For economies that have lost their competitiveness in the production of semi-skilled labor-intensive goods, regaining competitiveness in the absence of cuts in wage rates will involve either improving productivity in the production of the same goods or moving into the production of new and improved goods. And the latter will entail a greater emphasis on the design, development, and marketing of these goods as opposed to assembly-line operations. However, both options require workforces to upgrade their technological capabilities.
Improving Human Resources: Strategies and Policies

Allocation of Resources to Education and Technology Development

Given that the development of human resources, including technological capability, is important for improving productivity and for raising standards of living, one crucial question relates to how it should be financed. The case for public financing of the various human resource development activities must depend on two grounds. The first is the difference between social and private returns across various activities. When this difference is positive and large for any particular activity, the decisions of private individuals will lead naturally to an underinvestment in that activity from the point of view of a social optimum. Education generally falls into this category as it is believed to bring substantial benefits to society as a whole, and not just to those individuals who receive it. That is, education has a significant positive externality.

While activities geared toward the creation of new technologies such as R&D can reap substantial benefits to those conducting them—and this is precisely why profit-seeking firms conduct R&D—such activities can nonetheless benefit others as well. That is, the social returns can exceed the private returns. This happens because the knowledge developed as a result of R&D activities is difficult to appropriate completely by those carrying it out. Others can also derive benefits by virtue of imitation and reverse engineering. To the extent that this takes place, the market will undersupply them relative to the social optimum. Additionally, relying excessively on imports of new technology can reinforce the tendency for undersupply of R&D. Importing technology represents a very important opportunity for the ADEs: estimates from Indian firms reveal that the internal rates of returns from licensed import of technology were typically three times as much as from in-house R&D (Basant and Fikkert 1996, Hasan 1997). However, to some extent, such imports will substitute for local efforts (Fikkert 1997, Lee 1997) and over time this can have adverse consequences for domestic technological capability.

The second justification for public financing is on grounds of equity and income distribution. In the case of education, for example, if it is left entirely to private financing, the poor and disadvantaged are likely to be denied access to it. Even though poor people may wish to partake of education in the knowledge that this would greatly enhance their future earnings, they may have no way to pay for it. Typically, future earnings cannot be used as collateral for a loan, and so they cannot borrow against the stream of future incomes to pay for the education. The situation is similar with R&D. R&D activities are typically quite costly, and generally involve substantial outlays up front (for example, in setting up a well-equipped laboratory). While the costs of carrying out R&D may be sufficiently recouped through higher profits over time, obtaining credit can be a problem, especially for smaller firms. Effectively, these firms are denied the opportunity of conducting R&D.
In principle, therefore, there is a case for public financing of both education and technology development. However, in the face of limited public sector budgets, choices have to be made regarding which activities deserve the support of public finances and to what extent. In the ensuing discussion we first discuss the allocation of resources within the education sector itself. Then, we discuss activities such as R&D, highlighting, in particular, the close links between higher education and research.

A widely held view is that there is ample scope for reallocating public finances toward primary education and away from higher education in many developing economies, particularly those where access to primary education remains a serious problem. What is the rationale for this? First, despite the many difficulties in computing social returns and, therefore, the difference between social and private returns, many believe that these are greater for primary education as opposed to higher education. This view is perhaps best characterized by an illustration in Psacharopoulos (1996): the probability that higher education leads through research to a life-saving breakthrough is very small. On the other hand, lack of schooling guarantees illiteracy, which in turn is very likely to result in high transactions costs for the rest of the economy. Second, students enrolled in higher education can typically afford to pay for it (or a large part thereof).

On the basis of these arguments it would seem optimal for the low-income ADEs to focus on their provision of primary education. As noted in the third section, the primary sectors of the many low-income ADEs, especially those in South Asia, suffer from a number of serious problems of access and quality that could, in principle, be tackled through the allocation of more resources toward it. Yet, many of these economies tend to underemphasize their primary education sectors relative to their secondary and tertiary sectors. This can be seen in several ways. Because an examination of spending per student across primary and secondary sectors may be misleading as an indicator of a country’s relative priorities (teaching inputs, including teacher services, cost more for higher levels of education) one can examine the ratio of spending per student in primary versus secondary education across the ADEs. As Mingat (1995) notes, the value of this ratio for four South Asian countries (Bangladesh, India, Pakistan, and Sri Lanka) and the PRC is on average 0.40. In contrast, the ratio for both the ASEAN-4 and the NIEs is on average 0.70 and 0.71, respectively. Thus, in comparison to economies that tend to be much better off both economically and in terms of educational attainments, these low-income economies do not seem to prioritize the provision of primary education.

Similarly, one can compare pupil-teacher ratios across levels and ADEs to get some sense of the relative importance of primary education in some low-income

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7 Khan and Thorbecke (1988, 1989) examined the issue of technology choice and diffusion in Indonesia by using a social accounting matrix based model. Their work demonstrates that even for labor-intensive techniques, learning and skill are important. There are also linkage effects that are economywide. Based on their findings, a strong case can be made for the benefits of public financing of education and some types of technology.
ADEs. As computed by Mingat (1995), the “Asian means” for pupil-teacher ratios were 31, 23, and 18 at the primary, secondary, and tertiary levels respectively. The largest deviations from these means is in the case of primary education for three South Asian economies, Bangladesh, India, and Pakistan. For example, whereas the pupil-teacher ratios in Bangladesh at the secondary and tertiary levels were 27 and 19, respectively, and therefore not too far from the “Asian means”, it was 64 at the primary level—more than double the mean pupil-teacher ratio! 

Thus, in comparison with other Asian economies, especially the better performing ones of East and Southeast Asia, South Asian countries such as Bangladesh, India, Nepal, and Pakistan seem to devote fewer resources to the primary sector relative to higher levels. At the same time, they also have the poorest performance in terms of enrollments and student retention rates, suggesting strongly that relative neglect of primary education is responsible for its inadequacy.

It has to be admitted that in the absence of reliable estimates of social returns from investments at various levels of education it is impossible to rule out the possibility that South Asia’s relative neglect of its primary education in favor of higher education has not been imprudent. However, the microevidence on the relationship between returns from education and economic context described in the second section of this paper strongly suggests that at low income levels, economies would be well advised to focus on providing primary education of adequate quality. This is reinforced by the macro evidence of Mingat and Tan (1996) described earlier. In fact, as Mingat and Tan (1996) point out, if it is assumed that “all the benefits from investing in education get internalized in the performance of an economy over the medium-term”, it is possible to interpret the coefficients on enrollment rates at the three levels of education in their cross-country growth regressions as social benefits. Social returns may then be derived by comparing the social benefits with social costs of education, which Mingat and Tan compute by including not only the direct public and private costs of education but also estimates of the foregone earnings or production as a result of school attendance. Their results indicate that the highest social returns to education for low-income countries (those whose per capita GDP was 20 percent or less of the United States in 1960) stem from expanding primary education. For middle (per capita income between 20 and 40 percent of the United States in 1960) and high-income economies (per capita income greater than 40 percent of the US in 1960), it is the expansion of secondary and tertiary education, respectively, that result in the highest returns. When combined with the fact that a large number of

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8The countries included were: ASEAN-4, NIEs, Japan, PRC, and four South Asian economies (Bangladesh, India, Pakistan, and Sri Lanka).
9 The numbers for India and Pakistan were 48 and 25 and 41 and 19 at the primary and secondary levels, respectively (the ratios were not available at the tertiary level). The ratios for PRC and Sri Lanka—two economies that “under-invested” in primary education relative to other economies according to the first criteria considered here—were lower than the Asian means at all three levels of education.
10Moreover, arguments such as Psacharopulous above are based on heuristics.
children in the low-income ADEs continue to be denied the opportunity to acquire
decent literacy and numeracy skills, these numbers do make a compelling case for a
reallocation of public financing toward basic education in these economies.

At the same time, the implications of the above evidence are clear for the
higher-income economies of Asia that have been able to provide greater access to
primary education than their South Asian neighbors. These economies cannot afford
to rest on their laurels. As their economies have developed, sustaining future growth
requires greater skills and knowledge. Yet, as all of the evidence in the third section
suggests, particularly for the high-performing Southeast Asian economies, the cur-
crent systems of education have not delivered the required skills and knowledge. In
part, it is a reflection of market failures of the types mentioned at the beginning of
this section.

This is not to suggest that public resources be used to provide blanket subsidi-
ization for higher education. In the first place, it is important to distinguish, as does
Birdsall (1996), between the various types of higher education. Not all of higher edu-
cation involves research and research-based training, activities for which there could
be important externalities for society. In fact, much of higher education involves the
training of students for relatively well paid professional functions. The appropriate
role of the government in so far as the latter group of functions of higher education is
concerned is to ensure an effective loans and scholarship program to complement
user fees. Direct subsidies should essentially be reserved for research and research-
Based training that have important externalities. Moreover, these subsidies should be
channeled in the form of research grants to departments active in research.

In addition to subsidizing research activities in institutes of higher learning, it is
possible for governments to promote research activities by supporting special institu-
tions that facilitate the development of technologies that the private sector can use.
This is because in addition to the externality and credit constraints noted above, less
developed economies lack the critical mass of researchers that individual firms would
require for successful technology development. Thus, in Korea, for example, gov-
ernment research institutes took the lead in technological activities initially, with the
private industry taking a supporting role (Deolalikar 1997). To promote applied
research for industries, in 1966 the government established the Korean Institute of
Science and Technology. In its early years, the institute devoted its attention to the
relatively simple problems associated with technology transfer and absorption. In the
1970s the government decided to set up a number of other specialized research in-
stitutes, essentially an offshoot from the institute, in a number of fields, including
machinery, metals, electronics, nuclear energy, resources, chemicals, telecommuni-
cations, standards, shipbuilding, and marine sciences. By the end of the 1970s, Korea
had at least 16 R&D institutions (many of which were later consolidated under the
Ministry of Science and Technology). Similarly in Taipei, China, government
research institutes initiated a system of extension and contract research to provide technological support for private industry (Deolalikar 1997).

It is important to note that in their efforts to develop local technological capability, R&D institutions in both economies worked closely with the private sectors and were not meant to substitute private efforts but rather nurture them. Thus, whereas the Korean government accounted for nearly three quarters of the national R&D expenditures in the early 1970s, 80 percent of R&D expenditures was borne by the private sector by the early 1990s (Deolalikar 1997). Similar technology and R&D institutions in India have not worked as well, because they did not foster close partnerships with industry. As a result, these institutions have produced research and technologies that have not found many applications in industry.

In addition to fostering fruitful partnerships between the public and private sectors, the technology policies followed in both Korea and Taipei, China simultaneously encouraged the import of technology and developed local technology and technological capability. By contrast, the Government of India’s policy regarding the import of technology (whether by import of physical inputs such as equipment embodying foreign technology or by licensed transfer of technological know-how) was chiefly concerned with conserving foreign exchange. While in and of itself this may not have been an imprudent concern, the policy was implemented by an across-the-board attempt at developing locally what could be imported by installing a stringent import licensing regime that worked in tandem with some of the highest tariff rates in the world. By disregarding comparative advantage to such an extent and spreading meager research resources too thinly, India did not develop export competitiveness in virtually any knowledge-based industry. Interestingly, India’s very recent success in software exports—exports in 1995-1996 were $2.5 billion—has come about alongside greater market orientation in its economy and facilitative government policy toward this niche market.11

The foregoing has examined broadly the question of which kinds of investments in human capital deserve greatest attention in the allocation of public resources. In a nutshell, the answer has been that it depends on the economic context of a particular country. Expansion of primary education makes greatest sense for the low-income economies striving to make a breakthrough in manufacturing and improve agricultural productivity. On the other hand, the higher-income economies simply cannot afford to neglect higher levels of education and research activities related to technology development as some seem have to done.

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11 Of course, the enormous growth in the information technology industry in the US and Europe has been of critical importance. However, without greater market orientation and, therefore, sensitivity toward demand, it is doubtful that India’s software industry would have developed in the manner that it has.
Reforming the Education Sector

Making appropriate investments in human resources is not a question of simply allocating more resources to the appropriate levels of education. Indeed, this point is implicit in the above discussion of partnerships between the public and private sectors in research activities, where striking the right balance can lead to high payoffs. In fact, it has been argued that a fundamental change in the institutional setting, including the incentive structures under which the education sector in particular currently operates, is needed.

As mentioned before, the education sector has expanded tremendously in most ADEs over the last three decades. Much of this expansion, particularly at the lower levels of education, has taken place under government finance and provision. Nevertheless, as also mentioned before, in many circumstances the quality of education being delivered leaves much to be desired. On one hand, the problems of quality have to do with curricula. Especially at higher levels of education such as the senior secondary and tertiary levels, there is concern in many ADEs that current curricula do not emphasize scientific knowledge enough or are not developing the skills valued by the private sector. On the other hand, where there seems to be a consensus on what constitutes an appropriate curriculum (for example, developing basic literacy and numeracy skills at the primary level), there is concern that schools are unable to deliver it.

One answer to these problems may lie in greater decentralization and market orientation of education. In addition to alleviating strained public sector resources, greater decentralization and market orientation may be needed to overhaul the incentive structures of educational institutions and for teachers, to make the education sector more effective. In particular, when combined with a student loan and scholarship program to mitigate tendencies toward inequity, increasing the extent of decentralized management and finance (including private finance) in education can provide greater incentives for utilizing resources more efficiently at the level of the individual educational institutions and for delivering better quality. Additionally, they can create incentives for ensuring that curriculums suit the needs of labor markets.

Testing whether greater decentralization and market orientation improve both efficiency and quality is not easy. For example, comparing test scores (a measure of education quality) across public and private schools while controlling for costs and enrollments is not too helpful. Even if a positive association between private schooling and test scores were to be found, this does not imply that it is private schooling per se that is responsible for their better performance. If students with greater ability or from privileged homes choose to attend private schools then one would find private schools to perform better, holding all else equal. More generally, whenever there is sample selection, i.e., children select between different school types in a non-random fashion based on their unobserved characteristics, simple associations cannot
be taken to have causal interpretations. For drawing policy implications it is critical to control for sample selection when comparing schooling outcomes across school types.

Studies that attempt to control for sample selection, such as Jimenez and Lockheed (1995) (for Thailand, Philippines, Colombia, Tanzania, and the Dominican Republic) and Kingdon (1996) (for Uttar Pradesh state in India), find that private schools tend to deliver higher academic quality at comparable if not lower costs. Similarly, James, King, and Suryadi (1996) find that in primary schools in Indonesia, private funding improves the efficiency of schools regardless of whether the schools are publicly or privately managed. Additionally, private management achieves higher academic quality at comparable costs.

However, these studies have been subject to some criticisms. For example, as pointed out by Colclough (1996), private and public schools may not be homogenous and comparable categories. The sample of private and public schools may specialize in different curricula (academic versus typically more costly vocational education). Alternatively, there may be important locational differences (rural schools can be costly on a per student basis because of low population density; a disproportionately large public sector share in such areas could superficially suggest that public schools are less effective in terms of both quality and efficiency). Moreover, at least one study contradicts the general flavor of the findings above that private schools are more effective than their public school counterparts: Bashir (1997) finds that in primary schools in Tamil Nadu state in India, fully private schools were the least cost-effective whereas government-aided schools were the most cost-effective. Fully government schools were the intermediate case.

Clearly, more careful research is needed, particularly on explaining the differences in cost effectiveness when these seem to be genuinely there. One reason for the differences in cost effectiveness may be that headmasters in private schools typically have greater control on school-level decisions such as selection and utilization of teachers and their services, choice of textbooks, adaptation of curriculum, and improvements of instructional practice that influence student outcomes (Jimenez and Lockheed 1995). When coupled with the fact that headmasters in private schools are ultimately accountable to students’ parents, they have every incentive to exercise their control on school-level decisions in a manner that is compatible with parents’ interests.

Evidence to support this comes from a number of sources. In a review of the empirical literature on cost effectiveness of various schooling inputs (including teacher inputs), Pritchett and Filmer (1997) find a tendency for public sector allocation of schooling inputs to be biased toward teacher-related inputs over other peda-

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12 This result stands even when the potential endogeneity of source of funding is taken into account. For example, it could be the case that the central government allocates a greater proportion of its total funds to disadvantaged communities that also typically lack the capacity to attract more capable teachers and headmasters.
gogical inputs (such as textbooks). They argue that the pervasiveness of such allocation of resources is only consistent with decision making that gives an overly large weight to teacher welfare. Why should decision makers act in this way? According to the authors, decision makers are cognizant of the fact that teachers vote while books do not. Students and parents may not be well aware of the optimal mix of inputs in the pedagogical process and in any case typically are not organized well enough to influence centralized decision making regarding school inputs.

There are a number of case studies in support of the view that the incentive structure in public schools is inadequately geared toward improving student outcomes. For example, a survey of 15 villages in four districts of Uttar Pradesh by Dreze and Gazdar (1997) revealed teacher absenteeism to be endemic among public primary schools. Worse, even when teachers were present, they were engaged in activities that hardly resembled instruction, prompting Dreze and Gazdar to conclude that schools were essentially “child-minding” centers. Interestingly, parents and local residents were well aware of work-shirking among teachers and perceived this behavior to be one of the fundamental problems with schooling. In contrast, despite the fact that teachers in for-profit private schools were typically poorly paid and less qualified relative to public school teachers, they appeared to be more effective if only because they have to turn up to teach! (Nonprofit schools were rare in the sample and in any case were perceived to be well-run.)

Similarly, Duraiswamy et al. (1997) examine differences in management of teachers across different types of schools. In particular, they examine public, government-aided (which account for between 20 to 30 percent of all schools at primary and secondary levels), and private-unaided schools in eight districts of Tamil Nadu state in India. In some cases, salaries of teachers in unaided schools were a quarter of those in public schools. More interestingly, while the salaries of teachers in private-aided schools are paid by the state, the private management of these schools have the option of hiring teachers they deem to be superior (instead of being assigned teachers from the state capital, Chennai). In principle, private-aided schools can fire teachers deemed to be inefficient. Private-aided schools can also fill vacancies and replace absent teachers quickly. In contrast, public schools are much more constrained in all of these dimensions. The finding that districts with a greater percentage of private-aided schools perform better in terms of average performance on statewide test scores is consistent with the hypothesis that decentralizing management practices within public schools may lead to better schooling outcomes.

Reforming the incentive structure, particularly of public schools and their teachers, to become more responsive to the needs of students and parents may well lead to large payoffs. As the foregoing studies suggest, decentralization and greater market orientation is required. However, these are not panaceas. First, decentralization of finance and market orientation may well lead to growing inequities unless they are combined with effective student loan and scholarship programs for the poor.
As is well known, administering these efficiently is no easy task. Second, decentralization of management may simply shift “the same old problems” to levels less capable of resolving them. Clearly local capabilities, including those of local administrators and headmasters, will be an important deciding factor in the success of decentralization. It could be argued that where local capabilities at monitoring schools are scarce, appropriate incentive systems for teachers could be instituted. For example, teacher motivation is frequently assumed to be a critical factor in determining schooling outcomes; thus, it is often suggested that a portion of teachers’ salaries be associated with student performance. In practice, unfortunately, such schemes are rarely successful. Kremer (1995) illustrates the point with reference to Kenya’s policy of judging primary schools on the basis of results achieved on a national exam held in the eighth grade. Schools have responded to the incentives, “but the incentives are too narrow”: many schools seem to indulge in the practice of allowing only the best students to take the exam while forcing others to repeat the seventh grade. Moreover, such narrowly defined incentives may also encourage cheating and leakages of exam questions.\textsuperscript{13}

These caveats are not meant to suggest that decentralization and market orientation of the education sector are not the appropriate direction for the ADEs to head toward. In fact, virtually all ADEs are embracing these to some degree. However, these caveats must be kept in mind by policymakers if they are to seriously tackle the myriad problems of the education sector.

\section*{Conclusion}

The past few decades have seen the spectacular growth of a number of Asian economies. These miracle economies have compressed into the length of one generation the process of economic development that took many advanced industrialized countries more than a century to achieve. Notwithstanding the recent financial crisis that has affected some of these Asian economies, the extent of economic and social transformation achieved by these economies remains impressive. However, not all the ADEs have achieved the same degree of success as these miracle economies. Bangladesh, Myanmar, Nepal, and Viet Nam, for example, are among the world’s poorest nations.

The question is whether the current state of human resources is going to act as a building block or a binding constraint to the future economic growth of the Asian economies. The answer lies in identifying the extent to which investment in human

\footnote{13 The widespread cheating in many public examinations in India led Kingdon (1996) to dismiss the usage of score on such tests in her comparison of public and private schools. Instead she measured student achievements by adapting standardized tests of numeracy and literacy used by Knight and Sabot (1990) and designed by the Educational Testing Service, Princeton, New Jersey.}
resources can affect growth, and determining the degree to which the less developed ADEs can emulate the NIEs in developing their human resources. A related issue is how much the NIEs should invest in human resources to maintain their spectacular growth rates in the future, and whether or not it is a feasible objective.

A rapid demographic transition with falling birth and death rates and with the latter preceding the former, especially in the NIEs, has led to a bulge in the proportion of young people in the population that is working its way through the age structure. The NIEs’ economic success is attributable in part to an increase in the proportion of workers in the population and to the increased level of savings that resulted from the fast economic growth rates (Asian Development Bank 1998). These factors mutually reinforce each other: high growth leads to high savings, and hence to investment, which in turn further stimulates growth. More recently, Southeast Asia has begun to experience a bulge in its working-age population, and might also benefit from this demographic bonus. Eventually, the same may hold true for South Asia.

However, an increase in the labor force is not by itself a prerequisite for economic growth. It could merely result in higher unemployment and greater poverty. What is crucial in this context is how this resource is enhanced. One of the key elements behind the economic miracle, and one that the relatively less developed Asian countries ignore at their peril, has been the effective use and development of the most fundamental of all resources, the people.

This paper has offered an analysis of the specific problems particular groups of ADEs face. Obviously a single set of policies will not be appropriate for every economy, because different ADEs are in different stages of their development. For low-income ADEs such as Cambodia, Lao PDR, Viet Nam, and those in South Asia, improving the access to and quality of basic education should be the main focus. To the extent that adult illiteracy remains a major problem in these economies, basic literacy programs targeted at illiterate adults will also be needed.

For the middle-income ADEs such as the high-performing economies of Southeast Asia, the focus will have to be on improving the access to and quality of higher education, particularly that relating to the scientific and technical fields. Moreover, this focus will need to be supplemented by greater efforts at developing local technological capability; as revealed earlier, the national R&D expenditures as a percentage of GNP of the relatively advanced Southeast Asian economies are well below those of such lower-income ADEs as India and Pakistan.

For the NIEs, their success at transforming their economies has naturally led them to now aspire to a position of leadership in scientific innovation and technological advances, rather than remain imitators. Hong Kong, China and Singapore, which provide high-technology services in finance, trade, and transport, will require

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14 Many of these economies are also characterized by high levels of malnutrition and morbidity. In these economies, targeted policies to combat malnutrition and morbidity would have high payoffs in the form of increased agricultural productivity.
more sophisticated information infrastructure and basic scientific and technological development. To achieve all this calls for further upgrading of tertiary education in general, and of science and technology in particular. This would entail not only making greater investments in research infrastructure in universities, but also establishing an environment to foster creativity through greater administrative flexibility and unflagging commitment to academic and research excellence.

In the final analysis improved human resources and expanded technological capability are key to a successful transition to a more sophisticated and prosperous economic structure. Therefore, the ADEs would need to formulate, as in other spheres, the necessary human resource policies and implement them. The need for such actions will be further heightened with increasing globalization, which tends to provide bountiful rewards to good policies and to hand out ruthless punishments to bad ones.
References


———, various years. *World Development Indicators*. Washington, D. C.
Ecology, Inequality, and Poverty: The Case of Bangladesh
Haider Ali Khan

Abstract. This paper explores the connections between environmental damages, inequality, and poverty for Bangladesh. Starting with a new concept of national income and its distribution, which takes ecological damages into account, standard measures of poverty and inequality are modified by using the adjusted income distribution for their measurement. Under fairly conservative assumptions of modest environmental damages and a uniform distribution of the damages among the population, it is shown that both inequality and poverty worsen when environmental deterioration is taken into account. From a policy perspective, since there is no inevitable environmental Kuznets curve, developing countries like Bangladesh can enhance the poverty alleviation effects of growth by improving environmental quality through effective interventions.

Introduction

More than three quarters of a century ago, the famous Bengali poet Rabindranath Tagore brooded over the modern industrial civilization on his way to Japan. Depressed by the ugly sights of the Rangoon harbor and Penang, he wrote, “As our ship slowly sailed up to port, and the ambitious projects of man began to loom larger than nature, and the factory chimneys kept drawing their straight lines across nature’s curves–then I could see what an amount of ugliness had been created in the world through man’s passions ... the trade monster ... wearies the world with its weight, deafens the world with its noise, soils the world with its refuse ...”.


Haider Ali Khan is an economist at the Economics and Development Resource Center of the Asian Development Bank, and a visiting scholar at the Asian Development Bank Institute. He would like to thank Tsuyoshi Ito, Emma Banaria, and Pat Bayda for valuable assistance. Comments from Jesus Felipe, B.D. Pant, M.G. Quibria and several unknown referees were most helpful in revising the original draft.
Tagore was not an economist. However, his reaction to the negative externalities generated by haphazard industrialization would be understood by many serious economists today. Even as economic growth is recognized as necessary, the ecological consequences of unrestrained growth have come to be viewed as important issues that economic analysis should also address.

This paper focuses on some specific consequences of ecological damage. The possible connections between ecological damage, income distribution, and poverty are explored. Adjusting the existing income distribution by taking into account the ecological consequences will result in a different, typically unobserved income distribution. What are the consequences for the measurement of inequality and poverty, once we are able to construct this new income distribution? After offering some theoretical answers to this question, the paper applies the approaches developed to the case of Bangladesh. Despite limitations of data, some reasonable simulations can be carried out showing the possible implications of existing and ongoing ecological damages for poverty and inequality in Bangladesh.

The simulation results actually carry a significant policy message. Since the well-being of the people is seen to depend on both economic growth and quality of the environment, addressing ecological issues in a timely fashion can lead to improvements in economic well-being. In the case of a poor country such as Bangladesh, improvement of environmental quality will, together with sustainable economic growth, lead to a more rapid diminution of poverty as measured here. At the same time, relative inequalities along some important dimensions will decrease. In general, a combination of policies of pro-poor, pro-environment, and pro-sustainable growth leads to greater well-being for all, and in particular, the poor.

The main body of this paper is divided in three parts. In the next two sections the theoretical links between ecology, inequality, and poverty are pointed out. The third section starts with a quick summary of the present state of ecological destruction in Bangladesh. The main contribution of this section is to explore the possible consequences of the environmental damages for inequality and poverty measurement in Bangladesh via two sets of simulations based upon reasonable assumptions of environmental damage in Bangladesh.

The Link between Ecological Damage and Inequality

As is well known, comparisons of inequalities in income distributions can be either ordinal or cardinal. In this paper an axiomatic approach to cardinal compari-

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2The work in this area is of recent origin. Khan and Parvin (1984, 1990) proposed the incorporation of environmental factors in an axiomatic treatment of inequality and poverty comparisons. More recently Khan and Sonko (1994, 1997) have applied this framework to study the ecological and distributional aspects of structural adjustment programs in Africa.
sons in terms of Gini indexes is used. This is to facilitate comparisons with existing calculations of the Gini index in the simulations that follow. It is also assumed for the sake of simplicity that monetary equivalents of damage are either available or can be computed from the available data.  

The starting point for inequality comparisons is the vector of incomes of the individuals (or households) in a particular society ordered from the lowest to the highest. The normative axiom on transfers between individuals (or households) in the income distribution profile is crucial for comparisons of two income distribution profiles. This is sometimes referred to as the Pigou-Dalton transfer axiom. According to this axiom, any transfer from a richer to a poorer individual that preserves the relative ranks of the two individuals decreases inequality. Conversely, a regressive transfer (i.e., from a poorer to a richer person without changing anyone’s ranking in the income distribution profile) likewise will increase inequality. This statement applies to both ordinal comparisons using Lorenz curves and cardinal comparisons using indexes with numerical values. Clearly, cardinal indexes such as the Gini index can unambiguously rank income distribution profiles even when their respective Lorenz curves cross.

Suppose now we start with a given income distribution vector \( y \) for a particular society. There will be a certain cardinal index of inequality, say a particular value of the Gini index, associated with this income distribution \( y \).

We now simplify by assuming that all environmental damages can be given a monetary expression. Of course, this damage may or may not be evenly distributed among the population. We have to therefore arrive at an observed distribution of the damage. But this is not available for most developing countries. However, we can still make some progress in examining the links between ecological damage and inequality by making plausible assumptions regarding their distribution. Even these results, as subsequent exercises will try to demonstrate, can be quite revealing for both environmental and poverty alleviation policies.

In any case, given an environmental damage estimate \( x \) monetary units per person, and its distribution over the population \( x \) we can derive a new or adjusted distribution \( z \) by subtracting the monetary equivalent of the damage from observed incomes. More explicitly, this can be done in the following way. Suppose there are \( n \) individuals in the economy, with the actual income of the \( i \)th individual given by \( y_i \) \((i = 1, 2, \ldots, n)\). After the environmental damage (which we may recall is assumed to be uniform across individuals) has taken place, real income, i.e., income adjusted for environmental damages of the same individual \( i \) is: \( z_i = y_i - x \). We now compute

\[^3\text{It is possible to construct some types of cardinal indexes by specific aggregation schemes when all the components of environmental damage are not convertible to money. Massoumi (1986) constructs such an index without identifying environmental components. Khan (1992b) identifies such components explicitly. Intuitively, this involves weighting different components of welfare, including money income, environmental goods, and public goods and adding up the weighted components. There are significant technical problems that are not relevant to discuss here. The interested reader is referred to the two sources cited here.}\]
Gini indexes for $y = (y_1, y_2, \ldots, y_n)$ and $z = (z_1, z_2, \ldots, z_n)$ and compare $G(y)$ and $G(z)$, where $G(y)$ is the Gini index for observed income distribution and $G(z)$ is the “real”, (i.e., post-environmental cost accounting) Gini index for income inequality. Likewise, poverty indexes, for example, the familiar head count ratios, can be computed for both the observed income distribution $y$ and the adjusted income distribution $z$. Comparison of the headcount ratios in these two cases will tell us how accounting for environmental damages in this manner will affect poverty measurements. This is the essence of the inequality and poverty comparison methodology followed in this paper. A step-by-step description of the derivation of the inequality and poverty measures using the data from Bangladesh is given in the appendix. In the process of deriving the inequality and poverty index values for various years after environmental damages have been taken into account, a special assumption is used. It is assumed that the damages affect rich and poor alike. Therefore everyone loses an amount which is equal to the average, i.e., per capita damage is assumed to be identical. This assumption, which is explained and justified later in the paper, is called the “equality of misfortune assumption.”

**Some Welfare Theoretical Issues**

At this point some further analytical issues arise regarding the welfare economics of comparing inequalities when environmental damages not only reduce (true) income, but also contribute to growth. We must note that the relevant dynamic welfare comparisons are of two sorts. One is between the national welfare before the spurt of industrialization and modernization of agriculture (which increase both national incomes and the extent of ecological damage) and after. A second type of dynamic comparison is between the successive states of a growing economy after it has begun industrialization and modernization. In both cases (but especially in the former), growth by itself enhances welfare. What is being claimed here is that the actual (environmentally adjusted) level of national income will be lower and hence the welfare effect of growth will be less than what is appears to be, if we follow the approach suggested. Furthermore, distributional effects of growth will also need to be taken into account in comparing the relevant welfare levels. More specifically, if, as we have just seen, both income inequality and poverty are affected by ecological damage, then we must also take these effects into account in judging the welfare effects of growth. On both counts, ecological damages are likely to reduce the overall welfare-enhancing effects of growth.

At the outset, let us distinguish between the accounting and economic aspects of the problem. As the recent literature on environmental accounting makes clear,
subtracting environmental damages from total observed income is defensible on accounting grounds. However, this does not answer directly the question of how to evaluate (in utility terms or otherwise) the net social gain or loss from both growth and environmental costs of growth. The problem arises because in the context of the present paper (and for the inequality comparison literature in general) the relevant social welfare function (SWF) values both equality and increases in aggregate income. Without specifying a particular SWF we cannot be sure a priori whether welfare is higher or lower with or without environmental costs. However, if we choose a certain type of SWF (which has the property of weighting relatively more egalitarian distributions more positively) then under our assumptions the following two statements are true:\footnote{Technically, this class of welfare functions is known as Schur-concave welfare functions.}
\begin{enumerate}
\item The aggregate income after environmental damages are accounted for must decrease.
\item Any cardinal inequality index will show more inequality than it did when environmental costs had not been subtracted from people’s incomes.
\end{enumerate}

Therefore, on both counts, for any growth rate of income, the post-environmental damage level of welfare will be lower than the pre-environmental damage welfare level. It is, however, fairly certain that compared to the pre-industrial level of welfare, the growing economy will exhibit a greater level of economic welfare. Unless the pristine state of nature before growth is valued so highly (perhaps because the welfare economist in question is a luddite) that no amount of growth can compensate for the loss of environmental assets, this judgment will stand. The real problem is achieving an environmentally sustainable rate of growth, which also preserves a modicum of distributional equity according to the society’s perception of justice as fairness (Rawls 1970)\footnote{Rawlsian maximin principle is not the only principle of justice that can apply. Sen (1992) offers justice as “capability equalization” as an alternative. For further discussion and an extension of the capabilities approach see Khan (1998).} and thus optimally enhances welfare. Therefore, the discussion above should not be construed as antigrowth, but rather as a nuanced approach to the problem of sustainable growth with equity.

The Role of Equality of Misfortune Assumption

It is necessary to pinpoint the role of the equality of misfortune assumption (EMA) in the following analysis. There are two aspects of EMA—formal and substantive. Formally, EMA is in the nature of an a fortiori argument. In other words it is a weaker assumption than, for example, one that distributes costs of pollution
more to the lower end of income distribution profiles. Given the previously mentioned Pigou-Dalton condition, it then follows that under EMA, the resulting inequality, other things being equal, will be higher than that reflected by the original (i.e., observed) distribution.

More substantively, EMA reflects our ignorance about the actual distribution of environmental bads in Bangladesh. Volume II of the National Environment Management Action Plan (NEMAP) for Bangladesh (1995, 16-29) acknowledges the problems of measurement and information and proper policy formulation in this regard. However, the overall picture is one of rapid environmental deterioration from which the poor may suffer the most:

It is estimated that over 40 percent of the population regularly consume less than the absolute critical minimum of 1800 calories per day. These 50 million people are amongst the world’s poorest by any standard of development. Furthermore, others have estimated that the numbers of absolute poor have risen significantly. The poverty of these deprived people is deep rooted, pervasive and multi-faceted, relating not just to the absence of reliable incomes and productive assets, but also to food, safe water, sanitation, education, shelter, inequalities, injustice and lack of power. These most deprived persons of the world are also extremely vulnerable to disaster and disease. The challenges posed by this mass of poverty are enormous for a country which is now populated in total by over 120 million, on a land base which is already the most densely populated in the world at over 800 persons per sq. km., with accelerating environmental degradation (p. 18).

Thus EMA is a much more conservative assumption regarding the distribution of environmental bads than the actual situation—in all probability. The actual states of postecological accounting inequality and poverty are in all likelihood even worse than what is presented in this paper. Since no estimates are presently available of either the distribution of environmental bads or of post-ecological accounting inequality and poverty, the results reported in this paper may be seen as the best conservative estimates that policy makers may be able to use.

**Ecological Damage and Poverty**

By not considering the role played by ecological damage in effectively reducing people’s incomes the extent of poverty may be underestimated. I consider here the question of how one particular index of poverty, the Foster, Greer, and Thorbecke
(FGT) index may be affected, so that comparisons with the earlier estimates for Bangladesh (for example, Ahmed et al. 1991; Khan 1992a, 1994) are possible.

Since Sen’s (1976) axiomatic treatment of poverty comparisons, several new indexes of poverty have emerged. Among them, the one developed by Foster, Greer, and Thorbecke satisfies both desirable theoretical conditions and is also additively decomposable. Thus this index can take into account the intensity of poverty for different groups of poor people. This is done by looking at the deprivation of calories. The poverty measure is given by:

\[
p = \frac{1}{n} \sum_{j=1}^{q} \left( \frac{G_j}{z} \right)^a
\]

where
- \( n = \) total population
- \( q = \) number of poor
- \( z = \) poverty line
- \( G_j = \) food expenditure shortfall of the \( j \)th individual

In the simulation, a value of \( a = 2 \) is used. At a lower value of \( a \) some of the axioms are violated. At a higher value of \( a \) the shortfalls of the poorer segments are weighted more heavily. Therefore the intensity of deprivation by the poorer segments (in particular the poorest) will be magnified for values of \( a \) greater than \( z \). For this value of \( a \) both the monotonicity and transfer axioms of Sen are satisfied. We may recall that both these axioms have to do with the sensitivity of the index to the incomes of the poor as opposed to simply the number of poor. Thus, the monotonicity axiom states that, ceteris paribus, a decrease in the income of a poor person should increase the poverty index. The transfer axiom states that, ceteris paribus, a transfer of income from a lower-income poor person to a higher-income poor person increases the poverty index. It can be checked easily that this is true for the FGT index when \( a = 2 \).

Intuitively, this index measures the severity of poverty in terms of shortfall of food expenditures. Therefore, the lower the value of the index, the more the shortfall, therefore the more intensive the poverty. A higher value (always less than 1) will indicate comparatively less severe poverty. A value close to zero will indicate extremely severe poverty. We note also that the households with the higher shortfalls are weighted more heavily regardless of the value of the index. Hence, the index is quite sensitive to what happens to these households.

It should be emphasized that ecological damage does not affect the food poverty line (i.e., cost of minimum calories that are required). However, ecological damage does result in a reduction in income if proper accounting for such damage is
done. An intuitive way of justifying this is to think of such damages as increasing certain defensive expenditures for the family, for example, increased health care expenditures due to pollution-induced illnesses. This will force the individual to operate at a lower level of welfare than in a world without ecological damages offering the same money income. With this justification in mind some simple experiments assuming various degrees of damage and the EMA can be carried out. In all cases, we compare before and after damage poverty.

Economic Growth and Ecological Damage in Bangladesh:
Impact on Inequality and Poverty

After an initial decade of relative stagnation and after the country’s independence in 1971, the growth rate picked up in the 1980s and 1990s. The average GDP growth for the 1980s was 4.3 percent per annum. In 1990 the growth rate accelerated to 6.6, but could not be sustained. But from 1992 onward, growth has been over 4 percent, and in 1996 and 1997 exceeded 5 percent, reaching the highest level of 5.7 percent in 1997 (Asian Development Bank 1997, 1998). At the same time, in spite of success in population planning, population growth is still close to two percent per year. Hence, the per capita growth rate is somewhat less impressive. As the following sections show, this growth record has certainly led to some poverty alleviation, but the extent is not very large. Inequalities have remained fairly the same, increasing somewhat in the 1990s. There is, however, no reason to believe that there is an inevitable Kuznets curve in Bangladesh. As discussed later, there need not be an environmental Kuznets curve that is unavoidable as well.

At the same time, it is also true that this growth process necessary for poverty alleviation does have an environmental cost that is usually not taken into account. As the Bangladesh Bureau of Statistics (1998, 3) points out:

However, on the input side of the economy, both the non-renewable and renewable resources are being used up in an unplanned way that cannot be sustained in the long run. On the output side, ambient environmental qualities are being deteriorated continuously, ill effects of which are felt on the biotic system in particular and on the entire ecosystem in general. Thus the growth process is physically constrained by the stock and flow of natural and environmental resources.

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7 See for example, the volume on ecological economics edited by Costanza (1991). In particular, Salah El-Serafy in his essay “The Environment As Capital” in this volume argues that capital depreciation can be linked to a diminution of actual present and potential future incomes.

8 We should keep in mind the distinction made previously between static and growing economies. The relevant comparisons are between poverty with and without environmentally adjusted growth.
Recent attempts to classify the various types of environmental damages have led to the identification of six areas. These are: flora, fauna, atmosphere, water, land/soil, and human settlements. Unfortunately, systematic environmental accounting is only at a conceptual stage right now. One purpose of this paper is to show the importance of such accounting by presenting some simulation results. This is all one can do in the present context, but in the future, when systematically collected data become available, the methodology of this paper can be used to gauge the exact effects of environmental damages on inequality and poverty. Part of the message of this paper, therefore, is to underline the need for detailed environmental accounting in Bangladesh, among other things.

In what follows simulations are carried out under fairly conservative assumptions of income loss from environmental damage. The distribution of damages, as mentioned before, is assumed to be the same for each individual.

Given the limitations of data it is possible only to offer some range of estimates of ecologically adjusted inequality (EAI) and ecologically adjusted poverty (EAP) measures for Bangladesh. The main assumption made in the analysis that follows is quite conservative, as was pointed out in the first section.

Any loss of income is assumed to be uniformly distributed among the whole population, the “equality of misfortune” assumption. It may be surprising that by this assumption the poor suffer in absolute terms as much as the rich. But that is precisely the role the assumption is meant to play. In reality it is quite likely that the poor suffer more than the rich in absolute terms as well. A consideration of the location of poor people’s houses, their work environment, and the daily hazards of inhaling polluted air or drinking contaminated water will be enough to make a stronger assumption (one that makes the poor suffer more absolutely) justifiable. True, under the equality of misfortune assumption, rich and poor seem to suffer alike absolutely. However, in terms of the standard axioms of inequality comparisons, it can be shown that even under the mild assumption of “equality of misfortune” inequality will increase. This is because the lower income groups lose proportionately more than the upper income groups.\(^9\) If for some groups the loss is more than the difference between their incomes and the poverty line, poverty as measured by the head count will increase. Since the poor experience an increase in their shortfalls, poverty as measured by the income gap ratio will also show an increase.\(^10\) It is likely that the FGT measure will also record more (food) poverty. In what follows the consequences of equality of misfortune are explored in terms of the Gini index of inequality and the FGT index of poverty. For inequality comparisons this is done for three different income loss assumptions. First, a loss of mere 0.5% is assumed. Next, the loss is

\(^9\) Although the proposition is intuitively almost self-evident, the application of Pigou-Dalton transfer axiom requires a few extra steps. For a proof see Khan and Sonko (1994, 195).

\(^10\) For a proof of these as well as the condition under which the Sen Index will register more poverty, see Khan and Sonko (1994, 197-9).
increased first to 1% and then to 2%. Tables 1 and 2 describe the ordinary inequality index and EAI respectively. Tables 3 and 4 give the results for ordinary FGT index and the EAP and FGT index respectively.

Table 1: Inequality in Bangladesh

<table>
<thead>
<tr>
<th>Year</th>
<th>Gini Index of Inequality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1973/74</td>
<td>0.36</td>
</tr>
<tr>
<td>1981/82</td>
<td>0.39</td>
</tr>
<tr>
<td>1983/84</td>
<td>0.35</td>
</tr>
<tr>
<td>1988/89</td>
<td>0.38</td>
</tr>
<tr>
<td>1991/92</td>
<td>0.37</td>
</tr>
<tr>
<td>1995/96</td>
<td>0.43</td>
</tr>
</tbody>
</table>


As expected, the EAI in each case are indicative of greater inequality. Moreover, the increase in inequality is directly related to the increase in the size of ecological income loss. Given the nature of this particular index this is not surprising. In terms of welfare loss any welfare function consistent with the condition Pigou-Dalton transfer axiom will rank the EAI states as welfare-lowering as compared with the ordinary values of inequality. Thus it is clear that ecological losses matter very much in terms of inequality and welfare. Does it also matter for poverty measurements? Our theoretical answer to this question was that it should matter in most cases. Let us turn now to the simulation results using the FGT index of poverty.
Table 2:  Loss of National Income and Resulting Inequality

<table>
<thead>
<tr>
<th>Year</th>
<th>0.5 Percent</th>
<th>1 Percent</th>
<th>2 Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1973/74</td>
<td>0.41</td>
<td>0.43</td>
<td>0.49</td>
</tr>
<tr>
<td>1981/82</td>
<td>0.42</td>
<td>0.46</td>
<td>0.51</td>
</tr>
<tr>
<td>1983/84</td>
<td>0.39</td>
<td>0.42</td>
<td>0.47</td>
</tr>
<tr>
<td>1988/89</td>
<td>0.40</td>
<td>0.44</td>
<td>0.49</td>
</tr>
<tr>
<td>1991/92</td>
<td>0.39</td>
<td>0.43</td>
<td>0.48</td>
</tr>
<tr>
<td>1995/96</td>
<td>0.46</td>
<td>0.48</td>
<td>0.53</td>
</tr>
</tbody>
</table>

Source: Author’s calculations.

Table 3 shows the profile of poverty in Bangladesh before incomes are adjusted for ecological damage. Even so the situation looks quite grim for both FY82 and FY86, the two years for which this index was computed. Rural and urban poverty are both severe, but rural poverty is much more severe than urban poverty, especially in 1982. Table 4 shows the computation for 1 percent income loss.

Table 3:  A Profile of Poverty in Bangladesh during the 1980s

<table>
<thead>
<tr>
<th>Area</th>
<th>Poverty Line (Kcal/cap/month)</th>
<th>Poverty Severity (P)</th>
<th>Percent Contribution to Total Poverty*</th>
<th>Poor Area</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY82</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>61,472</td>
<td>0.0401</td>
<td>94.3</td>
<td>71.8</td>
<td>61.8</td>
</tr>
<tr>
<td>Urban</td>
<td>63,115</td>
<td>0.0150</td>
<td>5.7</td>
<td>65.3</td>
<td>9.1</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>0.0366</td>
<td>100.0</td>
<td>–</td>
<td>–</td>
<td>70.9</td>
</tr>
<tr>
<td>FY86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>61,472</td>
<td>0.0197</td>
<td>89.9</td>
<td>51.6</td>
<td>45.1</td>
</tr>
<tr>
<td>Urban</td>
<td>63,115</td>
<td>0.0153</td>
<td>10.1</td>
<td>66.8</td>
<td>8.4</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>–</td>
<td>0.0191</td>
<td>100.0</td>
<td>–</td>
<td>53.5</td>
</tr>
</tbody>
</table>

*Calculated as: 100 (area population/total population) (area P)/total P.
Table 4: A Profile of EAP in Bangladesh during the 1980s

<table>
<thead>
<tr>
<th>Area</th>
<th>Poverty Line (Kcal/cap/month)</th>
<th>Poverty Severity (P)</th>
<th>Percent Contribution to Total Poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>61,472</td>
<td>0.0812</td>
<td>96.1</td>
</tr>
<tr>
<td>Urban</td>
<td>63,115</td>
<td>0.0325</td>
<td>3.9</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>0.067</td>
<td></td>
<td>100.0</td>
</tr>
</tbody>
</table>

Using the same poverty line in terms of the cost of calorie consumption, the income loss leads to a worsening of the poverty profile in both rural and urban areas. Even under the assumption of equality of misfortune, regardless of the socioeconomic class and location (urban vs. rural), poverty worsens. Thus the conclusion that EAP indicates more poverty is warranted. Equally true is the conclusion that the severity of poverty as measured by this particular index also increases in the presence of ecological costs. These conclusions are likely to hold for most other poverty indexes as well.

Poverty during the 1990s

How has the situation evolved up to now with respect to poverty? In order to answer this question it is necessary to look at recent data. For this purpose, the latest household expenditure survey available (for 1995/1996) can be used. Another earlier year in the decade for which data are available is 1991/1992. Results of the computations are summarized in Table 5:

---

11 Although the results for poverty here are derived via the FGT index, the logic of the discussion suggests a broader “ecological” notion of poverty. Short of a complete conceptual overhaul in the direction of poverty as “capability failure”, income shortfall may also be used. As Thorbecke and Jung (1996) and Khan (1998) have shown, the direction of movement in these two indexes is the same. Therefore, at least for a broader income shortfall index, the results here should hold qualitatively.
Table 5: A Profile of EAP in Bangladesh in Recent Years

<table>
<thead>
<tr>
<th>Area</th>
<th>Poverty Line (Kcal/cap/month)</th>
<th>Poverty Severity (P)</th>
<th>Percent Contribution to Total Poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>61,472</td>
<td>0.0652</td>
<td>0.0531</td>
</tr>
<tr>
<td>Urban</td>
<td>63,115</td>
<td>0.0415</td>
<td>0.0426</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>–</td>
<td>0.0597</td>
<td>0.0481</td>
</tr>
</tbody>
</table>

By comparing Tables 4 and 5, it appears that the environmentally adjusted poverty index in the 1990s shows less poverty than in FY86; but it still shows more poverty than FY82. It is clear that during the 1990s, economic growth has led to some poverty alleviation. However, the deterioration of the environment in both urban and rural areas has attenuated the real impact of growth on poverty alleviation. Furthermore, in recent years, urban environmental problems have become progressively more severe. If, in accordance with this observation, allowance for greater loss of welfare in urban areas is made, the EAP will show greater poverty than is indicated in these tables.

Conclusions

It has long been conjectured that ecology and income distribution are connected. The foregoing theoretical observations and simulations show that these connections exist. Although it cannot be ruled out that theoretically, the possibility that there may be circumstances where upper income bracket members of the society may lose proportionately more than the poorer individuals, under typical conditions the actual effect is likely to be inegalitarian.

Using a fairly neutral and conservative assumption of uniform distribution of loss, it can be shown axiomatically that inequality increases when effective income is considered, leading to ecologically adjusted income distributions. The simulations presented here for Bangladesh demonstrate that both inequality and poverty measured by some popular indexes increase significantly under even this mild assumption and the assumption of moderate income loss.

Bangladesh is one of the poorest countries in the world. Poverty amelioration requires vigorous policy intervention according to many economists. Unfortunately the continuing ecological damage worsens the already serious condition of poverty. Thus ecosystem balance and maintenance is a sine qua non not just for sustainability but also for preventing the distributional and poverty problems from getting worse.
From the policy perspective, the results actually offer a useful policy complement to the usual poverty alleviation measures. To the extent that policies can be implemented to improve the environment, a corresponding reduction in poverty could be effected. What is necessary is to engage in improvement of the deteriorating environmental conditions and in defensive activities designed to prevent future environmental deterioration. Appropriate environmental policies of this type will benefit everyone, particularly the poor and the most vulnerable groups. It should be emphasized that there is no logically or empirically inevitable relationship between income growth and environmental deterioration. As a recent paper by Islam (1997) shows, there is no inevitable “environmental Kuznets curve” for Asia. Therefore, there is no good reason to believe that Bangladesh is doomed to have environmental decay as income grows to a sufficiently high level before a turning point is reached.\(^{12}\) Much depends here on appropriate environmental policies. One way to estimate the “window of opportunity” in terms of available resource flow for sustaining policies of defensive environmental expenditures is to calculate the “environmentally adjusted surplus” for the country, as suggested by Khan and Lipton (1993). Recent formulation of such policies in the National Environmental Management Action Plan is a good step forward as is the crafting of an overall framework for national environmental accounting. These steps at the national level have raised the hope that realistic policies based on solid data will be able to reverse the trend of environmental damage in the foreseeable future. With such environmental policies in place, further economic growth and complementary public action to help the poor (DeHaan and Lipton 1998) can also be expected to lead to further reduction in poverty levels.

\(^{12}\) In order to avoid any possible confusion, it should be pointed out that Islam uses the usual definition of income (that is, income unadjusted for environmental damage). However, the conclusion that there is no “environmental Kuznets curve” should also hold if the definition of income adopted in this paper is used. An increase in income and a decrease in environmental damages is a possible scenario. Happily, according to the approach adopted here, such a scenario can also lead to lower poverty and inequality.
APPENDIX
Computing Environmentally Adjusted Inequality and Poverty Indexes

Gini Index

1. Estimates of National Income, Y (available from BBS)

\[ \sum_{i=1}^{n} y_i = Y \]

2. Estimates of household income distribution \((y_1 \ldots y_n)\)

3. Equally distribute the environmental damage \(X\) to \(n\) households:

\[ \sum_{i=1}^{n} x_i = X \text{ and } x_i = \frac{X}{n} \]

4. Calculate Gini indexes for

\((y_1 \ldots y_n)\) and \((y_1-x_1, x_2-x_2, \ldots, y_n-x_n)\)

The results for various values of \(X\) are shown in Table 2.

FGT Index

1. Household expenditure data for a particular year from BBS.

2. Poverty line for minimum food expenditure \(Z\) (estimated by calculating the cost of acquiring a minimum level of nutrition).

3. Divide the food expenditure of the \(j\)th household, \(G_j\) by \(Z\).

4. Calculate \((G_j/Z)^2\) squared.

5. Add for all poor households and normalize.
References

Review. Forthcoming.
Dhaka: NEMA Secretariat.
1989.
Hitotsubashi University.
Working Paper, University of Denver and University of Akron.
———, 1984. “Environment, Externalities and Income.” University of Denver and University of
Akron. Mimeo.
Shepherd and K. Sonko, eds., Economic Justice in Africa: Adjustment and Sustainable De-
Tagore, R. “Japan Jatri.” Translated in Visva Bharati Quarterly, new series, 4:2:96, 104; and
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Contributors include well-known economists Kenneth Abbott, Jagdish Bhagwati, Douglas Brooks, Jeffrey Frankel, Patrick Low, James Riedel, Ammar Siamwalla, Arvind Subramanian, Shang-Jin Wei, John Whalley. □

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