BROAD OBJECTIVES AND INSTRUMENTS

Continuous assessment of development progress and policies requires a broader than usual framework even if all elements are not quantifiable. Here we look at development goals and policy instruments and formulate some hypotheses about the links between them. A formal model and discussion of the empirical results are in chapter 2 and annex 2.

People value at least three dimensions of life in current and future time periods. They gain direct satisfaction from education and other aspects of human capital, such as life expectancy or literacy; from clean air and water and other stocks of natural capital; and from flows of consumption goods, such as food and shelter. They also care about the welfare of future generations and their enjoyment of all these aspects of life (at some discount rate). A society will try to get the most from human, natural, and physical capital, subject to the total resource constraint. Together, increases in these dimensions signify quality growth.

The simple associations among the goals and policies, in the form of correlations and scatter charts, are presented here. Annex 2 presents an econometric analysis, which complements a vast literature in this area.

Goals and Policy Measures

We constructed composite indexes for human development and environmental sustainability, enabling us to focus on three measures of quality of growth rather than a large number: human development, economic growth, and environmental sustainability. The policy instruments include those emphasized in the *World Development Report 1991* (World Bank 1991) along with several others. The correlations between policies and

goals are shown in table A1.1. These correspond to the summary figures 1.2 and 1.5 in chapter 1. The associations between policies and component indicators forming the indexes are not shown. Scatter plots for selected combinations of goals and policies are shown in figure A1.1, after controlling for the effects of initial period income.

The goals and the proximate variables used are

- *Human development indicators.* We constructed a human development index from data on reductions in infant mortality, reductions in the illiteracy rate, and increases in life expectancy. The period over which changes were computed was from the early 1980s to the

Table A1.1. Relationships between Development Objectives and Policy Instruments, 1981–98

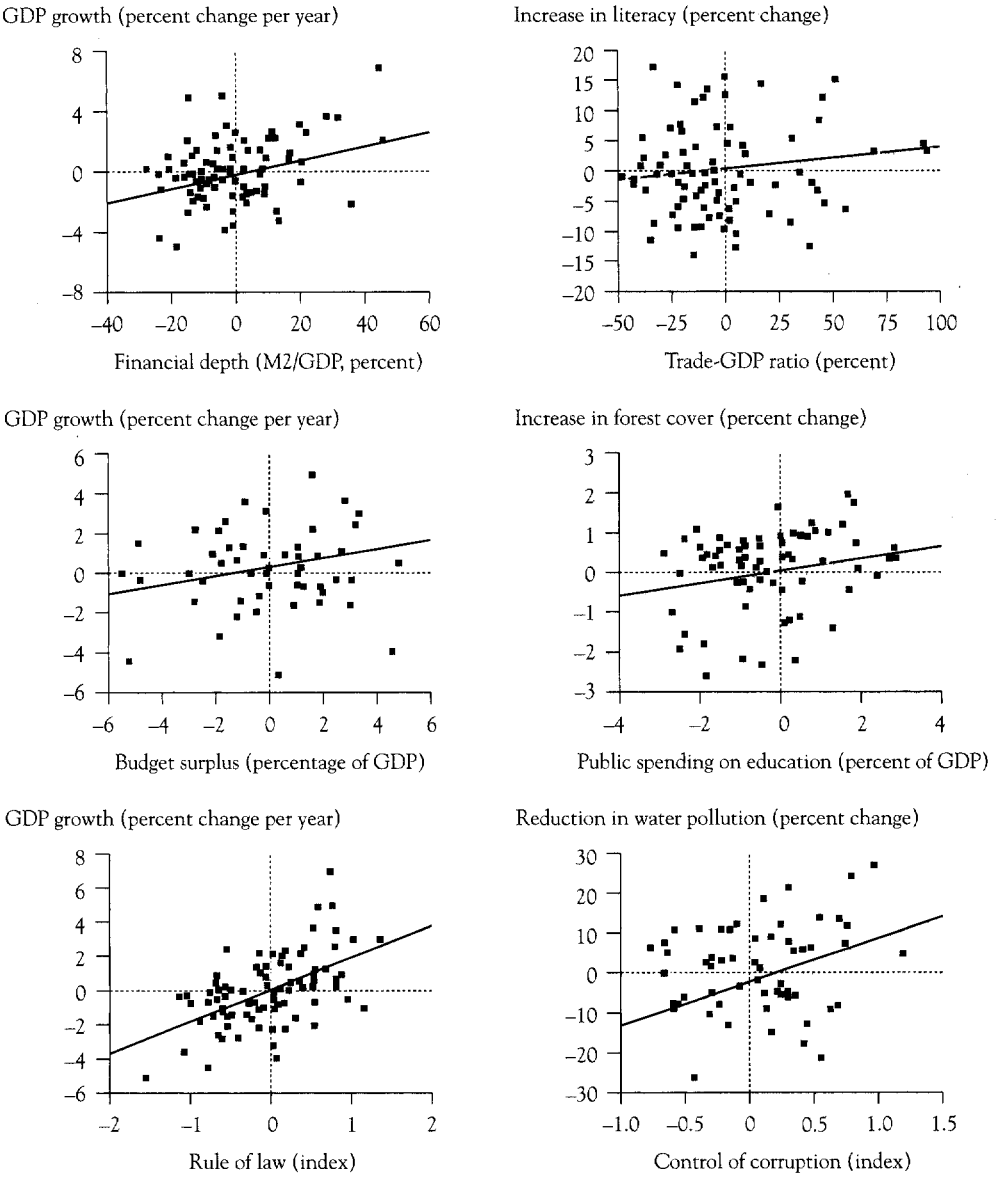
	Goals								
	Human development			*GDP growth*			*Sustainable development*		
Instruments	*Correlation coefficient*	*Significance level*	*Number of countries*	*Correlation coefficient*	*Significance level*	*Number of countries*	*Correlation coefficient*	*Significance level*	*Number of countries*
Educational spending/ GDP	0.04	0.72	87	–0.02	0.84	88	0.17	0.21	56
Health spending/GDP (1990–98)	–0.01	0.95	70	***–0.28***	0.02	71	0.18	0.23	49
Budget surplus	0.12	0.40	55	***0.27***	0.05	55	0.01	0.97	39
Trade/GDP ratio	0.07	0.50	89	0.07	0.50	90	–0.05	0.69	56
Change in mean tariff	0.05	0.82	26	–0.09	0.65	26	–0.10	0.65	25
Capital account openness index (1988)	0.21	0.22	36	0.00	0.99	36	–0.22	0.23	31
Financial repression index (1996)	–0.16	0.50	21	0.26	0.26	21	–0.35	0.12	21
M2/GDP	***0.36***	0.00	89	***0.29***	0.01	90	–0.08	0.58	56
Domestic environmental action (dummy variable)	–0.16	0.15	80	***0.24***	0.03	81	–0.10	0.47	56
International environmental action (dummy variable)	0.11	0.35	80	0.08	0.49	81	***–0.24***	0.08	56
Rule of law index (1997–98)	***0.34***	0.00	86	***0.41***	0.00	87	0.18	0.19	55
Government effectiveness index (1997–98)	***0.35***	0.00	81	***0.27***	0.00	82	0.05	0.73	55

Notes: Improvement in human development is defined as the Borda index of reduction in infant mortality, reduction in illiteracy, and increase in life expectancy between the 1980s and 1990s. Improvement in sustainable development is defined as the Borda index of decreases in carbon dioxide emissions, deforestation, and water pollution between the 1980s and 1990s. Correlations that are significant at least at the 10 percent level are shown in bold italics.

Source: World Bank (2000c); authors' computations.

Relationships between objectives and instruments

Figure A1.1. Development Objectives and Policy Instruments



Note: The scatter plots are constructed using residuals from the regressions of the respective variables—pertaining to both the axes—against GDP per capita in 1981.

Source: World Bank (2000c); authors' computations.

late 1990s. We wanted to incorporate in the index variables reflecting income distribution, reduction in the incidence of poverty and the gender gap in educational attainment, but did not because data were unavailable for many countries.

- *Sustainable development indicators.* We constructed a composite index of the negative annual rate of deforestation, reductions in carbon dioxide emissions per capita, and reductions in water pollution per capita. The period used was again from the early 1980s to the late 1990s. We wanted to include in the index a measure of air pollution in the major cities in developing countries, but comparable data were available only for recent years.
- *Income growth.* We used growth rates between 1981 and 1998 of GDP and intermediate indicators such as capital stock and TFP growth, as used in many empirical studies, such as those employed by Barro (1990), Easterly (1999a), Easterly and others (1993), Nehru and Dhareshwar (1993), Pritchett (1998), World Bank (1991), and Young (1992).

Policy instruments were represented by the following:

- *Social spending on education and health.* They were expressed as percentages of GDP, averaged over available values for the period: 1981–97 for education spending and 1990–98 for health spending. Due to data limitations, we could not include allocation of spending on basic education and preventive health services (Filmer, Hammer, and Pritchett forthcoming; López, Thomas, and Wang 1998).
- *Environmental commitment.* We used two dummy variables to represent environmental commitment: one for domestic action, based on environmental strategy formulation and profiling, and another for international action, based on the signing of the Global Treaty on Climate Change. Unfortunately, more refined indicators of government policies toward sustainable development are not yet available.
- *Macroeconomic policy.* We used budget surplus as a percentage of GDP (Barro 1990; Fischer 1993).
- *Openness.* We used the trade-to-GDP ratio, parallel-market premium, change in mean tariff, and a measure of capital controls based on Quinn (1997) and Quinn and Toyoda (1997) (a higher value of the index represents a greater degree of openness to capital inflows; see annex 5).
- *Financial depth, prudence, and risk management.* We used financial depth as measured by the ratio of M2 to GDP and an index of financial

repression (based on Williamson and Mahar 1998; a lower value of the index represents a more liberal financial system).

- *Governance indicators.* Six governance indicators—rule of law, government effectiveness, control of corruption, voice and accountability, regulatory burden, and political instability and violence—have been examined in this book. Of this list, the first three have been used in this annex. For further details and analysis see chapter 6 and annex 6.

Composite Indexes of Human and Sustainable Development

We used the Borda ranking technique to construct a single index for human development and one for sustainable development. The indicators for the index of human development are

- Reduction in infant mortality between the 1980s and 1990s
- Reduction in adult illiteracy between the 1980s and 1990s
- Increase in life expectancy between the 1980s and 1990s.

The indicators for the index of sustainable development are

- Decline in emissions of carbon dioxide per capita between the 1980s and 1990s
- Decreases in emission of organic water pollutants (kilograms per day per worker) between the 1980s and 1990s
- The negative of annual average rate of deforestation measured over 1980–95.

The Borda ranking procedure involves assigning each country a point equal to its rank in each component criterion. Each country's points over all the components are averaged, and the averages are used to re-rank the countries. The procedure allows the aggregation of indicators with different units of measurement and different periods and country coverages; that is, it allows comparisons among countries across categories even when the number of countries studied varies by category. For more details regarding the Borda ranking techniques see Fine and Fine (1974a,b), Goodman and Markowitz (1952), Smith (1973), and Thomas and Wang (1996).

We also tried an alternative method of aggregation that transformed each component variable into a standardized score, with a mean of 0 and a standard deviation of 1, and then averaged them. In the significance of correlation coefficients, the results were substantially similar.