Sustainable Development: An Introduction

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Summary. — The methodologies and key results of the papers in this special issue are summarized, with emphasis on the limits to growth that developing and postsocialist economies are likely to face over the coming 5 to 10 years.

1. INTRODUCTION

This World Development special issue deals with the complex and vexing problems of how to sustain distributionally equitable income growth subject to present-day economic, political, and environmental constraints, in a representative sample of developing the postsocialist countries which includes Argentina, Brazil, Chile, China, India, Mexico, Nicaragua, Philippines, Russia, Turkey, and Zimbabwe. The analysis centers on potential interactions among the three sets of restrictions, and how they may work out in the medium run.

This set of papers is the third coming out of a long-year research project organized through the World Institute for Development Economics Research (WIDER) in Helsinki. Previous rounds focused on problems of economic stabilization and medium-term adjustment respectively. The emphasis here is on issues arising in the medium to long run. This introductory paper takes up the questions the authors were asked to address, the methodologies they utilized, and some key findings. With an eye toward policy, results common across the country studies are drawn together in a final section. With this information at hand, the reader should be equipped to delve into the symposium’s fascinating analyses of the limits to growth that developing and postsocialist economies will face over the coming years.

2. RESEARCH OUTLINE

The authors share analytical approaches, including the use of three-gap models to discuss limiting factors on economic growth, decomposition exercises to quantify such restrictions over time, and analyses of distributional and allocational effects of price movements. The studies are informed by similar views about the role of the state and the social classes, and the political process. At the outset, it makes sense to locate these ideas in relation to recent history and the general policy debate.

(a) The policy background

The Second and Third Worlds have been strongly influenced by neoliberal policy trends over the last dozen years. The countries in the present sample are no exceptions. In most cases, the outcomes of liberalization episodes have not been favorable.

Turkey, for example, was advertised as a liberalization “miracle” in the mid-1980s but is in financial disarray as of this writing (August 1995). Mexico’s spectacular plunge from financial grace was more recent, while Argentina with its strong real exchange rate and destabilized capital inflows now faces negative real income growth.

In the postsocialist camp, Russia’s 1992 ‘global shock’ produced high inflation and strongly negative output growth, while China avoided such a policy package and is growing fast. A few years ago, Zimbabwe abandoned its version of socialism and implemented a liberalization program which is pushing the economy toward deindustrialization and concentration on raw material exports, while the outcome of a similar attempt in India remains undecided. Post-Sandinista reform in Nicaragua is mired in stagnation.

In a more capitalist vein, the Philippines has “served as a testing ground for Anglo-American approaches to development” (the paper authors’ words) for decades without outstanding results.

*Research support from WIDER, SAREC, and SIDA, and written comments by Alice Amsden, Korkut Boratav, Bill Gibson, Gerry Helleiner, Joseph Lim, Mohan Rao, Jorn Ratts, and Stanislav Zhukov are gratefully acknowledged.

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Chile's rapid growth since the mid-1980s is usually attributed to opening up the economy, but as the country authors point out, substantial public intervention and environmental deterioration in support of natural resource exports were also involved. Brazil has partially liberalized, but if the latest anti-inflation program holds, the authors recommend a medium-term growth strategy based on intelligent state intervention.

(b) Historical and institutional analysis

These observations suggest that the debate about the merits of a "Washington consensus" or "market friendly" policy line versus a more interventionist approach is likely to be with us for some time. The country authors tend to favor the latter stance. They combine this preference with insights into the historical and institutional factors which condition growth prospects in their economies. The papers here contain much more political economy than do standard country studies.

For example, with regard to the neoliberal axiom that state intervention provokes "rent-seeking" and unproductive resource diversion, the Turkish authors observe that "... in most Third World countries the bourgeoisie itself is a creation of the state and this historical phenomenon has created cultural, sociological, and economic traits which do not disappear with changes in the policy model." From this observation they deduce that market liberalization is not likely to do away with rents in the form of advantageous positions for specific business groups, because "... the very process of rent-seeking emanates from the bourgeoisie, [and] not the state per se."

In Turkey (and other countries in the sample) instead of disappearing under market-friendly policies, rent creation has surged over the past few years, spawned by export incentives, speculative urban finance, privatization and stock exchange operations, and fiscal incentives. Such socially rooted developments do not fall into the purview of the Washington model, which cannot cope with the fact that rents and corruption often rise instead of declining when old forms of regulation are suppressed.

Similarly, conflict and cooperation among social groups strongly affect economic performance. In the case of India,

... civil society [is] comprised of three dominant classes — industrial capitalists, rich (large and medium) farmers, and white-collar and managerial workers — and non-dominant classes — industrial workers, small farmers, and landless agricultural workers.

The dominant classes want to retain their positions, but are also divided over issues such as relative prices, resource allocation, and state regulation of industry. From time to time, they form alliances among themselves and nondominant classes, and the state of play affects economic performance. Such tensions can be put at the center of sensibly constructed macroeconomic models, as illustrated by the paper on Zimbabwe.

Similar lines of analysis show up in other studies. Sociopolitical tension over the economic and environmental effects of deforestation is a central theme in the Philippines, with other ecological/economic conflicts arising in India, Russia, Zimbabwe and before, during, and after Sandinista times in Nicaragua. Struggles over income distribution have long been a central theme of Latin American structuralist analysis, which underlies the papers for Argentina, Brazil, Chile, and Mexico. Emergence of new forms of social organization will be central to the ongoing dramas in China and Russia, with implications for both economic performance and the environment.

(c) Three-gap models

The papers share common approaches to strictly economic analysis. Figure 1 illustrates the three-gap model which most of them use. The key assumption is that there are several potentially binding relationships between the current level of economic activity (or "capacity utilization" $u$) on the horizontal axis and capital formation (assumed to determine the "growth rate of potential output" $g$) on the vertical.

One such relationship is imposed by the need for external balance. In a developing country, more economic activity typically draws in intermediate and other forms of imports, while it may cut back on export sales. At the same time, the import content of gross capital formation is high. Hence, for a given trade deficit (sustained, for example, by new private or public capital inflows net of interest payments abroad), there is an inverse tradeoff between $u$ and $g$. If one variable goes up, the other must decline as illustrated by the "External gap" schedule in the diagram.
This curve will shift in response to several key variables. In many countries it moved sharply downward at the onset of the debt crisis in 1982 and began to slide back up in the late 1980s when private capital flows became more plentiful.

Investment is also limited by available saving, which on Keynesian grounds can be assumed to be an increasing function of the level of economic activity. This relationship underlies the upward-sloping “Saving gap” schedule. Its position can shift in response to a variety of forces. In Mexico, for example, the national saving rate fell by around 10% of GDP in the early 1990s as rapid trade liberalization and exchange overvaluation led households and firms to buy enthusiastically abroad. Such conversion of an escalating trade deficit into consumption as opposed to capital formation did not bode well for future growth — even before the financial collapse of December 1994.

Another macroeconomic variable affecting saving behavior is inflation. More rapid price increases are likely to shift the schedule upward via “forced saving” (income redistribution against low-saving classes such as wage-earners whose incomes are not fully indexed to more rapidly rising prices) and the “inflation tax” (erosion of wealth by inflation which leads asset-holders to save more to compensate for capital losses). These modes of macro adjustment were central features of many countries’ reactions to the 1982 debt shock.

Finally, investment itself may be spurred by higher capacity utilization à la the traditional accelerator. In a somewhat more round-about though empirically relevant process, private capital formation may respond to (or be “crowded-in” by) public investment, especially in infrastructure. If fiscal revenues net of current expenditures rise as a function of u, then so can the sum of public and (crowded-in) private levels of investment. These two mechanisms give rise to the positively sloped “Investment or Fiscal gap.”

Improvements in fiscal positions have been one positive outcome of orthodox adjustment packages in Latin America and to an extent elsewhere (although revenue gains due to privatization of state enterprises will prove to be transitory). Contrariwise, India’s growth spurt in the 1980s was associated with increasing ratios of fiscal and external debts to GDP as restrictions which had been binding in previous decades started to loosen.

There was a sudden crunch in 1991, but foreign capital began to come in again after liberalization maneuvers. Whether fiscal and external constraints on Indian growth will shift downward remains to be seen. Renewed increases in debt ratios are not a good omen.

Capital formation itself is also tricky to manage. With state guidance, China has been finding investment outlets for its massive capital inflows and domestic saving supply (in light of Mexico and Turkey, there is of course no reason to expect the inflow of funds to increase at exponential rates indefinitely). Other countries appear to be investment constrained. Russia, in particular, has suffered an enormous investment collapse in the wake of the disintegration of its socialist planning system.

These examples suggest that the gap framework can be used in various ways. One takes the form of ex post decompositions of shifts in the schedules (details below). Another is a discussion of which constraint(s) may be predetermined, with the others adjusting their position(s) via endogenous variable shifts. Identification of such “binding” gap(s) in different time periods is an approach adopted by several papers, in part drawing upon political economy considerations.

The behavioral content of the simple model in Figure 1 can easily be enriched. For example, in the paper on Brazil, the parameter determining the increase in the growth rate of potential output induced by new capital formation is assumed to shift in response to specific spending and/or liberalization initiatives which act as “capital-output ratio easing activities” (or K.O.R.E.A. for short). Another extension is to ask what kinds of relative price changes such as real devaluation or real wage cuts underlie movements in the schedules under different hypotheses about binding constraints (in a computable general equilibrium model for Zimbabwe, and informally for India and Turkey). Similarly, rural credit restrictions and higher interest rates under a binding saving constraint in Nicaragua may force poor farmers toward land-intensive, environmentally degrading agricultural practices. Finally, the model can be extended to deal with dynamic relationships between external capital movements and growth as in the papers on Argentina and Mexico.

(d) Decomposition exercises

The gap restrictions summarize different components of an economy’s interlocking set of social accounts: the external constraint reflects the current and capital accounts of the balance of payments; the saving constraint, the saving-investment balance from the national income and product accounts; and the fiscal constraint, the flows of funds of the government and financial system. Ex post, all “gaps between the gaps” must disappear in the sense that investment less national saving is equal to the external deficit, foreign reserve increases and government borrowing from the Central Bank appear as part of increases in the money supply, and so on.

Ex ante, however, the gaps can move independently of each other. This observation underlies the decompositions of changes over time in different balances that appear in several papers. An illustrative
example could start from a definition of "foreign savings" or the current account deficit $S_t$ as

$$S_t = P_m mX + rD - P_e eW,$$

where $P_m$ is the world price of imports, $m$ is an import/output coefficient, $X$ is national output, $r$ is the "world" rate of interest, $D$ is external debt, $P_e$ is the world price of "our" exports, $W$ is world real income, and $e$ is a coefficient relating exports to $W$. Let $O$ stand for the economy's potential output (its growth rate $g$ is plotted on the vertical axis of Figure 1), an $u$ be the level of capacity utilization, $u = X/Q$ (plotted on the horizontal axis of Figure 1). Let $P$ stand for the national price level, $P_m = P_m/P$, $P_e = P_J/P$, $d = D/PQ$, and $w = W/X$.

With these definitions, (1) can be written in normalized form as

$$s_t = S/PQ = p_m mu + rd - p_e ewu.$$

Taking first differences over time of all terms in this equation (indicated by the operator $\Delta$) gives the decomposition:

$$\Delta s_t = \mu \Delta p_m - ew u \Delta p_e - p_e e u \Delta w + d \Delta r$$

\[\begin{align*}
\text{External shocks} & \quad \Delta d \\
\text{Debt burden} & \quad (p_m - p_e) \Delta u + (p_m - p_e) \Delta m - p_e w \Delta e \\
\text{Policy options} & \quad \text{interaction terms.}
\end{align*}\]

The interaction terms come in because (1) is not being differentiated but rather "differenced" to account for the discrete nature of data sets.

The classification of terms in (3) follows Bacha (1986), and illustrates how different forces make the level of foreign savings evolve. The first line takes into account shifts in the external terms of trade and world income, the next reflects the increase in foreign debt relative to the size of the local economy as measured by the value of potential output $PQ$, and the last line's terms reflect policy changes which might induce recession or income redistribution as well as shifts in trading propensities.

The papers for India, Nicaragua, Philippines, and Turkey use decomposition techniques along the lines just illustrated to study the development of the external and fiscal deficits, and other studies take on the same questions less formally.

(c) Relative price changes

Most of the countries have experienced major shifts in relative prices, including swings of tens of percentage points or more in the real exchange rate (according to various definitions), fluctuations of similar magnitude in the real wage, shifts of the real interest rate from strongly negative to positive levels or vice-versa, movements in the agricultural terms of trade, real energy prices, and so on. All such changes can have distributional impacts, and have been important to the political economy of change. They also can have strong effects on uses and abuses of the environment, as taken up below.

Experience in Turkey provides one example. The 1980s miracle there fell apart when large reductions in the real wage and agricultural terms of trade imposed as part of an early "Washington consensus" package proved to be politically unsustainable — a wage explosion late in the 1980s derailed export growth.

Along with Mexico, Argentina, and the Philippines, Turkey then switched to a combination of high domestic interest rates and a strong exchange rate, to lure in capital inflows and generate a trade deficit via which they could be absorbed. Such a price combination is pleasing to local rentiers and Wall Street, but in most cases does not seem to support rapid output growth. Moreover, the financial crises in Mexico and Turkey underline its downside risks. Even if there is no crisis, a "soft landing" from growth supported by exponentially increasing capital inflows still has to be engineered. The countries just mentioned as well as India and China (which have so far avoided exchange appreciation by respectively monetizing and investing financial capital inflows) may or may not be able to pull such a maneuver off.

In a last example, Russia's internal relative prices have shifted strongly in favor of the energy sector from initially very low levels, strengthening the positions of the relevant state enterprises and politicians (up to the highest levels) associated with them. Non-energy sectors with export prospects have been severely affected on the side of costs. Many high-tech enterprises are in danger of being shut down as a consequence of this innovative form of Dutch disease, in which bringing internal intermediate traded goods prices toward world levels bankrupts user industries. Meanwhile, if the price shifts induce a new spurt in oil, gas, and nuclear production, the effects on the environment may be devastating. Hard choices present themselves with regard to industrial policy, environmental preservation, and political balance.

(f) Macro-micro questions

In design of industrial and agricultural policy, "macro-micro" coordination issues remain unresolved (Fanelli and Frenkel, 1994). Experience over the past two decades shows that liberalization is not a sufficient condition for efficiency gains — a theme amply developed in the country papers. More generally, there is no history under capitalism of completely unrestricted markets and much evidence that collabo-
ration among organized economic actors is crucial for output and productivity growth (Shapiro and Taylor, 1990). In the context of a given country’s institutions and income distribution, how can it be attained?

Mexico and Turkey demonstrate that thorough-going liberalization can lead to macroeconomic instability (as indeed the Southern Cone experience of the late 1970s had already shown). Ways to open economies while avoiding highly destabilizing capital movements remain to be discovered. The gap restrictions can easily move the wrong way. Saving rates can plummet as opportunities to buy abroad open up, as in Zimbabwe recently where a falling saving rate and a constant fiscal deficit have forced the authorities to raise interest rates and cripple investment demand. Even if saving stays high, as it has so far in Russia, there is no certainty that productive outlets in the form of investment projects will appear in the absence of directed public intervention. If they don’t materialize, the excess saving supply will spill over into speculative financial advances and capital flight.

If the macroeconomy remains on track, there are also questions about how to induce efficiency gains. The recovery of the Brazilian automobile sector in the late early 1990s, for example, was the result of a corporatist deal among the state, producers, and workers (Fanelli and Frenkel, 1994). The Chilean government’s role in supporting the natural resource export boom since 1985 has already been noted, while the Korean state’s proactive pursuit of industrial growth over decades is by now widely recognized (Amsden, 1989). Such past successes (and many failures of interventionist policies all ‘round the world) do not amount to detailed guidelines for future moves. But they do suggest that economic growth is not likely to be induced by International Monetary Style (IMF)-style stabilization combined with dogmatic market liberalization and privatization. Despite 15 years of effort, the current Washington blend has no outright successes (Chile not being a pure case of liberalization) and many failures on its balance sheet.

(g) Financial instability

The foreign exchange crises in Turkey and Mexico are only the most visible manifestations of financial fragility in the developing world. As already observed, similar pathologies threaten other countries in the sample, which are rapidly building up high ratios of external or fiscal debt to GDP, suffering collapses of investment or saving, or are the sites of intense speculative activity by foreign investors or the bourgeoisie.

One recent manifestation of such problems is dollarization of national financial systems, especially in situations in which the exchange rate is ostentatiously pegged to the dollar as a nominal inflation anchor. If capital inflows follow, how are they to be absorbed? Even if they are monetized, the public may still prefer to hold dollar-denominated claims, e.g., “Argen-dollars” or something similar while at the same time enterprises build up dollar debt.

If either market stumbles, the authorities are at risk. Outside the United States, even a charismatic finance minister can only manufacture ersatz dollars in case the local central bank has to try to act as a lender of last resort. The alternative is for international agencies to step in with a bail-out operation as in Mexico in early 1995, but few other developing countries are big enough borrowers to force Wall Street and the US government to mount a major international effort to secure their clients’ capital at risk.

In another twist, even if central bank interventions are credible, they can worsen existing imbalances. In Russia’s “payments crisis” of 1992, for example, there was a huge build-up in interenterprise arrears as firms continued to sell to one another when the authorities attempted to restrain credit. These delayed payments were finally taken over by the central bank, which also lent massively to the government. The debt in the bank’s portfolio was offset by money emission and a build-up in commercial bank excess deposit reserves. The commercial banks, in turn, are unable to lend because household and enterprise savings flows remain high while investment has collapsed. The saving surplus, meanwhile, spills over into capital flight. This web of financial imbalances is not likely to promote real output growth.

Russia’s, Mexico’s, and Argentina’s cases are perhaps extreme, but several other countries in the sample are in financial distress. It is one of the most ominous consequences of rapid market liberalization.

(h) Human resource accumulation

Where it is relevant, the studies address the economic and environmental implications of population growth. They also stress the need to reform the bureaucracy. Contrary to orthodox discussions, however, they do not place great emphasis on human capital accumulation per se. One reason is that in a perspective of five to 10 years, extra educational investments will not have time to pay off.

More fundamentally, education is a necessary or concomitant condition for growth, but not sufficient. There are significant counter examples to a positive long-run education/growth correlation (Brazil and Sri Lanka are obvious historical cases in opposite directions). If one or another gap binds strongly enough to push an economy into chronic recession, then in middle-income countries (although probably not in sub-Saharan Africa) there is not likely to be an extreme shortage of skills. The papers here concentrate on more direct determinants of growth, which is
consistent with saying that if productivity is going to increase in the long run, then it will almost certainly have to be accompanied by a much more educated labor force.

(i) Productivity growth

There are of course other sources of productivity increases, as discussed in several papers. The authors are careful about the methodological pitfalls inherent in interpreting the meaning of an increase in “total factor productivity.” Is it a simply a “residual” which goes up when output rises more rapidly for whatever reason (say, expansionary fiscal policy or a less severely binding foreign exchange constraint) or is faster productivity growth a truly autonomous source of output expansion? Putting observed productivity change in its appropriate political economy context is crucial to making sense of the concept.

(ii) Poverty and distribution

A final observation is that throughout Latin America, Africa, and Eastern Europe, poverty has increased steadily since the early 1980s, related to price shifts as discussed above but also due to slow growth caused by the debt crisis and market liberalization programs that backfired. Now that capital is (for the movement, at least) flowing to some countries, how can it be used to underwrite not just growth, but equitable growth? This question is intimately related to ongoing environmental degradation in the sample countries, the topic we take up next.

3. THE ENVIRONMENT AND THE ECONOMY

It is clear that macroeconomic policy can have substantial impacts on the environment. Access to credit can help the poor avoid “intensive” degradation or “mining” of the environment as discussed below. The proceeds of “green” taxes on excessive “extensive” environmental pressures on the part of big producers can be transferred to those who would otherwise use intensive methods. Incomes policies can be redesigned to reduce intensive decay when belt-tightening is needed.

Environmental changes can also be linked to macro balances, as will be seen presently. If environmental spending is the residual in the fiscal gap, for example, then austerity programs may exacerbate both extensive and intensive decay. Higher interest rates do the same thing, by draining resources from the state budget. By cutting real wages, devaluation can worsen intensive degradation. On the other hand, if it raises incomes of poor agro-export producers, it may given them more ecological room to maneuver.

Beyond these short- to medium-term linkages, there are also longer term feedbacks between the economy and the environment. Following Karshenas (1992), Figure 2 illustrates relationships between a stock of environmental amenities $z$ on the vertical axis and potential economic output $q$ on the horizontal. Both variables are measured per capita, i.e. $q = Q/N$ where $N$ is population and $Q$ is potential output as defined above (on the basis of standard national accounting conventions, at least for the moment). Similarly, $z = Z/N$ where $Z$ is a stock environmental indicator appropriate to the country at hand. For example, forest cover is a convenient measure of potential environmental well-being in the Philippines and the Brazilian Amazon. Degraded land in Zimbabwe and unconverted nuclear plants and military installations in Russia comprise massive stocks of environmental “bads.”

As shown in the diagram, there are “danger zones” in both economic and environmental terms; prudent national planning would hold $q > q^*$ to avoid immobilization and social conflict, and $z > z^*$ to preclude the possibility of environmental collapse. Nonetheless, these boundaries may be approached or even crossed. From an initial point $A$, for example, the trajectory toward $B$ represents environmental mining of the sort an increasingly desperate and impoverished population can easily pursue. It reflects the plight of “... an economy with stagnant technology, low investment and capital stock and a growing population which eats into the natural capital stock in order to survive” (Karshenas, 1992). As the authors of several studies observe, their countries are in danger of falling into such a trap.

An alternative trajectory could run from $A$ toward $C$, with the environmental asset initially being run down to permit economically productive capacity to be built up. The Philippine authors point out that such a trajectory describes their country, with the drawback...
that because of the society’s faction-riven political and economic structure, exploitation of the forests has been intense but accumulation weak. The poor are hit hard by deforestation and associated erosion and degradation of watercourses and coastal fisheries, and have made the environment into a political issue.

Debates about the desirability an A-to-C style resource use trajectory are likely to be vigorous over the coming years. In terms of Figure 2, does it make sense for the Philippines (or any other country) to push as rapidly as possible toward the “east” of economic expansion even if that means moving “south” into ecological degradation for a least a time before it can start going “north” as higher income permits environmental improvements to be made? All across the political spectrum, many development economists would recommend such a strategy; their greener counterparts would be strongly opposed.

Indeed, a thorough-going green strategy would be to hold potential output per capita stable or even let it decline to permit environmental improvement along the trajectory running from A toward D. Such a path embodies the recommendations of gradualist “deep ecologists” for industrial societies (Naess, 1990). Their more activist brethren might prefer an environmental version of Russia’s global economic shock.

Mainstream economists assume that a “society” chooses its path in Figure 2 by maximizing a discounted welfare function subject to known technical restrictions over time. The dual solution to the optimizing problem provides a set of shadow prices which can be used to guide resource allocation and also provide the proper means of accounting for growth. From the preceding discussion, it should be clear that the WIDER authors see grave problems on both political and epistemological grounds with this approach.

Politically, there is no reason to expect societal consensus on either environmental or economic questions — the degree of class and distributional conflict in any real economy rules out such accord. The state itself may be autonomous, a creature of conflict-ridden civil society, or something in between. In none of these cases is the “objective” of state policy likely to resemble a neoclassical social welfare function.

Epistemologically, environmental decision making is subject to fundamental uncertainty — no meaningful probability distributions can be put on future events which are unforeseeable given the present state of knowledge. Products such as the CFC chemicals used as refrigerator coolants and in making styrofoam cups would have stood out as environmentally friendly in an optimal growth model solved subject to the technical knowledge of the 1970s; it was only later that people discovered that they created the ozone hole.

Even according to its adherents, the mainstream approach has produced just one policy-relevant generalization — “Hartwick’s rule” (1977) which states that if a society invests all the competitive rents generated by a wasting natural resource in reproducible capital, then it will be able to maintain a constant level of consumption per head. More generally, natural, reproducible, and human capitals can be combined in one broad aggregate which generates an interest income flow. If the aggregate is held constant per capita but with substitutions among its components, then interest income per capita will also be sustained.

At the macro level, does Hartwick’s prescription apply? Historical experience in Russia, the Philippines, and elsewhere suggests that it may not. More mechanically, Pearce and Atkinson (1995) ask whether national saving exceeds depletion of physical and natural capital in a sample of economies. The results range from a saving surplus of 17% of GDP in Japan, down through 0% in Mexico, the Philippines, and the United Kingdom, to −14% in Mali. The authors do not ask whether these numbers reflect the considerations underlying Figure 2 on sustainability or the sorts of macroeconomic restrictions summarized in Figure 1. The latter seems far more likely to be the case.

(a) Macroeconomic approaches to the environment

The foregoing observations about the relevance of macroeconomic concerns to the environment constitute a major theme underlying the WIDER project. It marks an initial attempt by a high level group of macroeconomists collaborating with environmental specialists to deal with these issues. The resulting studies do not succeed in creating an integrated macro-environmental development economies — in a first try, that would be too much to expect. But they do take steps in the right direction.

One key question is how much it will cost in terms of real money (that is, direct fiscal outlays or private expenditures which the authorities will have to try to induce enterprises and households to undertake) to meet reasonable environmental standards? There may well be “economic” measures of benefits to be attained by meeting such standards, but they are not politically comparable to real money being paid out. Getting a package of electrical industry subsidies to clean up acid rain through the national legislature is one thing; doing a transport cost or hedonic price evaluation of the (possibly) resulting healthier lakes and forests is quite another.

Most of the papers provide evidence about both sets of numbers, but concentrate on expenditures. In some cases, environmental outlays “required” to meet reasonable standards appear to be very high — up to 5% of GDP on a continuing basis in Russia and Brazil and in the 2% range elsewhere. Such percentages are comparable in magnitude to the payments obligations
imposed by the debt shock and could be equally destabilizing macroeconomically.

In Brazil, for example, the authors see the fiscal constraint as tightly binding. On plausible assumptions about the degree of complementarity between public and private investment and the value of the incremental potential output/capital ratio, they calculate that each extra percentage of GDP devoted to environmental amelioration would reduce the growth rate of potential output by about 0.7% per year. Such a stark tradeoff would make the greenest imaginable Finance Minister think twice about ecological spending. Potential offsets could include productivity gains induced by environmental K.O.R.E.A. effects and clever design of fiscal measures such as removal of brown subsidies and implementation of green taxes. But their implications would have to be traced through in detail.

In a reverse causal pattern, economic gains can provoke environmental losses, as along the downward-sloping section of trajectory AC in Figure 2. Primary product exporters — Argentina, Brazil, Chile, Mexico, Nicaragua, Philippines, and Russia — are notable in the present sample — can follow this course. Such extensive environmental degradation in the form of extending the realm of natural resource exploitation to the greatest extent can in principle be captured by appropriate revisions to the national income and product accounts. Normally measured economic growth must be reduced because depletion of natural resources in the form of mineral extraction or decimation of forests. In a related effort, product flows may be written down to take into account production of “bads” such as air and water pollution. As illustrated in the Mexican and Philippine studies, making such calculations is not an exact science — estimated loss values can range over many percentage points of annual growth or shares of GDP.

To repeat a point made earlier, in a Finance Minister’s mind such numbers — however interesting — are not likely to be commensurate with the ones appearing in his or her budget address. Moreover, they elude the socioeconomic processes underlying resource degradation. Conflicts and bargains within the narrow Philippine economic oligarchy (and, as noted, increasing political reactions on the part of the poor) underlie the archipelago’s deforestation and land-guid growth. Prospects for the future will depend on how national saving and investment patterns evolve now that the forests are gone. In Russia, the post-1991 relative price shifts in favor of the energy sector have strengthened its economic position. The outcome could be a rebirth of the Soviet system of extensive, “nature-devouring” resource use and an orgy of oil and gas exploitation with returns that do not flow into long-term accumulation — unless the present political configuration adjusts.

Finally, more intensive degradation of a finite environmental asset stock can lead to trajectories such as AB in Figure 2. How can such a destructive path be avoided? The Zimbabwe authors suggest that land reform may induce the poor, black, rural segment of the population to stop mining the environment. The consequences would include a reduction in tobacco production for export, i.e. the external gap could begin to bind. Relative price changes implicit in the structural adjustment program underway in India could shift the agricultural product mix toward exportables and away from food crops for domestic use — with potentially damaging implications for both the environment and the poor.

In Nicaragua’s fairly simple economy, the nature of environmental damage can be linked to the dominant gap:

Roughly speaking, it may be that extensive decay is more closely associated with the investment and foreign exchange gaps, while intensive decline is linked to the saving gap. While any binding constraint will ultimately reduce growth and thus extensive damage, processes operated by the poor are less intensive in foreign exchange and more dependent on credit . . . This suggests that when the saving constraint binds at the macroeconomic level, the associated environmental costs are likely to be intensive rather than extensive.

In China’s far more intricate system, such processes occur at both macro and submacro levels. In rural areas, for example, township and village enterprises (TVEs) now serve as buoyant sources of growth, but are environmentally damaging. Since the TVEs are nourished by ample public credit, any reduction in China’s high savings rate could reduce this source of extensive degradation but lead to more intensive pressure on the environment on the part of the poor.

Deforestation and land erosion are driven by both rural and urban income expansion, and China’s rapidly expanding use of coal as its primary energy source is linked directly to economic growth. Whether growth will generate sufficient resources to attack the country’s impressive list of extensive environmental problems as along the upward-sloping segment of Figure 2’s trajectory AC remains an open question. If China’s saving rate remains high, it will at least provide a more solid base for such an effort than would be present if the economy were highly dependent on external capital flows.

In India, “ . . . the present, admittedly dismal state of the environment is the result not of excessive but insufficient economic growth.” The picture is complicated at the local level. Some rural populations lack water and fodder and face fuelwood scarcity and degraded forests. In the Karshenas diagram they are moving from A toward B, with income inequality “ . . . inseparably linked with both suboptimal returns to private inputs and the inefficient and damaging extraction or use of natural resources.” In other rural areas, higher incomes, better resource endowments, and more equitable sociopolitical situations may permit
expansion of both physical and environmental assets. Will the nation’s political complexity permit local populations to break out of ecological traps so that equitable, green growth can occur overall?

(b) Bifurcations?

All the foregoing macroeconomic and environmental pressures reflect themselves in peoples’ ways of living, and there are reverse feedbacks which can play out over time. China, for example, may be at cusp separating two sorts of future economic paths. On the one side, there could be a breakdown of the present growth model — perhaps induced by a shake-out of external finance which could dwarf Mexico’s 1994–95 events — that could lead to rising poverty nationwide, possibly faster population growth, and increasingly intensive environmental degradation. On the other side, there could be a continued rapid output growth which would help consolidate the demographic transition, definitively slowing population growth and leading to faster increases in $z$ and $q$ in Figure 2. This path would generate industrialization-associated extensive environmental problems which future income levels might (or might not) be high enough to ameliorate.

The details differ, but similar questions about economic, environmental, gender, and population interactions show up all around the developing world. The studies here demonstrate that they are quantitatively significant at the scale of national employment or output. They also provide information about how to steer the economy toward the extensive side of the bifurcation point, where at least there may be a future of resolvable environmental problems to confront.

In Zimbabwe, for example, land reform may be the key. Chile may require export diversification away from its current, extensive pattern of natural resource use. China and India will require a panoply of green policies and budgetary reallocations, as sketched in the paper for the latter country. Nicaragua and the Philippines may have to await resolution of political overdetermination of policy choice. Russia must wrestle with immense economic realignment and its history of extensive degradation. As the authors observe, each ruble of the economy’s current wealth is estimated to have required 2.2 rubles of natural resource use to be produced.

4. THE LIMITS TO GROWTH

In closing, a useful question to ask is what are the factors that will affect growth prospects over a horizon on the order of 10 years? The papers here cannot provide conclusive answers, but they do point out economic, political, and environment relationships that are likely to count. Here is a brief review:

(a) Where are the gaps?

The key question for growth programming is the present and future configuration of the gap constraints. It is influenced by many factors — the reliability of capital inflows, the strength of crowding-out and -in effects, and the nature of the inflationary process, to mention just a few. An extremely unbalanced set of social accounts, as in Russia since its global shock, almost certainly precludes sustained output expansion; a balanced set may be close to a sufficient condition for growth (assuming investors’ animal spirits and/or responsiveness to public investment are near normal). An awareness of the historical evolution of these restrictions helps one think about their future positions, but as always the “dark forces of time and ignorance” render everybody’s vision blurred.

(b) Macro prices

The country papers make clear that economic actors do respond to changes in “macro” prices such as the real wage, the real exchange rate (more generally, the nature of trade and capital market protection), and the interest rate, not to mention the rate of inflation. Pushing these prices in the “right” direction, however, does not necessarily lead to the gains in efficiency that neoclassical theory posits — sustained productivity growth seems to stem from more fundamental socioeconomic forces. Worse still, responses of different groups of actors to price changes can be destabilizing in economic, environmental, and political dimensions. Rapid market liberalization, in particular, has been a recipe for disaster in several of the countries studied here.

(c) Financial instability

Deep financial markets are presumably growth-enhancing, but putting them into place is no mean task. External capital market liberalization coupled with internal speculative booms have been recurrent phenomena in the Second and Third Worlds since the present wave of liberalizing policy gathered force in the mid-1970s. New forms of instability keep appearing (as described in several papers), and will continue to do so in the absence of gradualist, institutionally appropriate introductions of financial reform.

(d) Macro-micro connections

Many aspects of macro-micro linkages — rational design of industrial and trade strategies, formulation of agricultural policy, enhancement of the “embedded autonomy” of bureaucracies (Evans, 1995), establish-
ment of effective schemes of financial regulation, etc. — could not be fully addressed in a symposium of short papers. With the failure of liberalization — the most recent “simple” solution to the riddle of growth — to deliver results, they will now come to the forefront of policy analysis. Certainly, hints at ways to formulate macro-micro policy appear in all the country studies, as might be expected on the basis of the authors’ institutional awareness.

(e) Environmental-economic feedbacks

The politico-economic and environmental systems influence each other in ways that are just beginning to be understood. By concentrating on investment, fiscal, foreign exchange, and saving limits to growth, formal macroeconomic analysis may have an anti-green bias. The environment is more than just an extension of the fiscal gap, although economists are strongly tempted to view it in just that fashion.

At the same time, several country papers point to positive feedbacks among poverty reduction, environmental amelioration, and economic expansion — of course, such a “win-win” configuration can also turn into “lose-lose” if things start going the wrong way. A switch from a virtuous to a vicious circle of macro-environmental causation may happen in some countries if traditional patterns of growth are pursued.

(f) Against simplicity

The debate about the merits of laissez-faire and interventionist interpretations of capitalism has been with us a long time. Both The Road to Serfdom (Hayek, 1944) and The Great Transformation (Polanyi, 1944) were published two generations ago, and their polyhistoric authors’ citations go much further back. For about 20–25 years in (North Atlantic) economic discourse and 15–20 years in policy practice, the laissez-faire position in the development debate has had the upperhand. It now appears to have two severe problems.

The first is that a decade or two seem a reasonable time frame to test a policy stance. As recounted in the papers here and in other sources, at the country level the results of Washington-style reform packages are, at best, mixed. Moreover, “success” cases such as Japan, South Korea, and Taiwan based their policies on anti-laissez-faire postulates. Global system-wide imbalances and instabilities of the sort emphasized by Polanyi also appear to be present, at least for poor cousins such as Mexico and Turkey.

Second, pace Hayek with his emphasis on the inscrutable, “organic” nature of capitalist development, present-day laissez-faire enthusiasts have a simple message. IMF-style stabilization, market liberalization, privatization, and supporting changes in income and wealth distributions are supposed to comprise sufficient conditions for robust economic growth. Anyone conscious of a moving suite of growth restrictions, complicated effects of price changes, potential financial instabilities, macro-micro linkages, and political, institutional, and environmental feedbacks into the economic process is bound to disagree.

The economic system is not simple and is so flexible that it will never be fully understood. Its environmental connections make the picture even more complex. But there are fruitful ways to think about how these systems work, and even how to make them work better. That is the central message of the papers in this symposium.

NOTES

1. The first round’s results appear in a set of Stabilization and Adjustment Policies and Programmes Studies published by WIDER in 1987–88 and are summarized in Taylor (1988). Papers from the second round appear in Taylor (1993). The studies presented here were financed by WIDER, and the Swedish institutions SAREC and SIDA. All the authors are grateful to the sponsors, WIDER’s staff and former director Lal Jayawardena, and Enrique Ganzuza for unstinting support.

2. The content of the Washington policy blend is well-known by now, and is not spelled out here. Descriptions and analyses are given in previous publications from the WIDER project and Fanelli, Frenkel, and Winograd (1987). The present formulation draws on Taylor (1994).

3. The three-gap approach is an extension of the two-gap models originally developed by the late Hollis Chenery (the description of binding macroeconomic constraints as “gaps” not easily bridged by market adjustment processes is his). It was pioneered by participants in the WIDER project, with early papers including Carneiro and Wereck (1987) and Fanelli, Frenkel, and Winograd (1987). The present formulation draws on Taylor (1994).

4. Three-gap analysis was initially motivated by the observation that the debt crisis shifted down both the external and fiscal gaps. The latter movement occurred because most developing countries nationalized their foreign debt, meaning that government capacity to undertake capital formation was sharply reduced as external interest payments soared. Hence, overall investment declined via negative crowding-in and the heightened uncertainty resulting from the debt shock. Typically, the new intersection of the fiscal and foreign gaps lay to the left of an initial equilibrium point at which the three schedules crossed. To restore macroeconomic balance the saving schedule had to rise (or aggregate demand had to be curtailed), often as a consequence of big jumps in the rate of inflation.
5. The technique of “differentiating the balances” to show how they shift over time was introduced by Bacha (1986) and Helleiner (1986). The specific methodology used in the papers here was developed by Gibson (1991).

6. That is, \( g_t = (Q_t - Q_0)/Q_0 = \Delta Q_0/Q_0 = g_0 + k t/Q_0 \) where \( t \) indexes time, the intercept term \( g_0 \) sums the (offsetting) effects of depreciation and technical change on capital productivity, \( I \), is gross capital formation at time \( t \), and \( k \) is an incremental potential output/capital ratio.

7. The “macro-micro” distinction refers to policy coordination crossing different aggregate economic levels, e.g., between exchange rate policy on the one hand and setting tariffs for specific commodities on the other. Less aggregated activities can also have their own, targeted “meso” policies as discussed by Cornia, Jolly, and Stewart (1987).

8. More formally defined, “extensive” environmental decay results from economically rational (for the agents concerned) use of a resource which is unsustainable — think of initially profitable firms ultimately extinguishing a fishery or forest. “Intensive” degradation is the use of a “wrong” production or consumption technique from an environmental point of view. The wrong method is chosen because the right one will not provide a livable income. For more details, see the paper on Nicaragua where this terminology is introduced.

9. There is no reason for asset stocks to be fully utilized. An economy may well have its output \( X \) below its capacity level \( Q \), because of deficient aggregate demand, a binding foreign exchange and/or fiscal constraint, or general disorganization \( a la \) (post global shock) Rus. Similarly, flows of environmental “goods” need not be as high as available capacities might permit — within their technological parameters, Chernobyl-type nuclear power plants can be run well or badly.


11. This is the parameter \( k \) in the growth equation in note 6.

12. In the simple growth equation of note 6, such revisions amount to reducing the value (perhaps to negative levels) of the intercept term \( g_0 \).

**REFERENCES**


Panelli, Jose Maria and Roberto Frenkel, “Estabilidad y Estructura: Intracciones en el Crecimiento Economico” (Buenos Aires: CEDES, 1994).


