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Under-investing in public goods: evidence, causes, and consequences for agricultural development, equity, and the environment

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Abstract

A common factor that explains why agriculture causes too much environmental degradation, grows too slowly, and has been ineffective in reducing rural poverty is the generalized tendency by governments to under invest in public goods despite the high rates of return to such investments. A large share of rural public expenditures is deviated to private goods (mostly subsidies to the wealthy), which generally have low or even negative rates of return. Behind such an obviously aberrant choice are political economy forces; a highly unequal political lobby market leads to government policies that are biased in favor of economic elites and detrimental for both the environment and rural development. Globalization may affect this important distortion on the allocation of government expenditures in various ways. One such way is by restricting the ability of governments to repress the political mobilization of the poor to counter the almost unchallenged power of the elites in the lobby market. This may contribute toward creating conditions that are more consistent with sustainable and socially equitable development.

JEL classification: Q18

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1. Introduction

The first and central question of this paper is why have the environmental effects of agriculture been so negative in most developing countries?[1] A useful conceptual framework to analyze this issue has to be much broader than the conventional externality approach that attributes environmental degradation to its most proximate cause, the unsolved externalities (if they could only be "internalized"). The environmental impact of agriculture cannot be separated from the performance of the sector, including growth rates, distributional impacts and, most importantly, the underlying political economy process that determines how public resources are allocated in rural areas. To further orient the analysis, two additional questions that are highly complementary to the first are postulated in this paper.

The second question needs some introduction. Recent studies have shown that in the relatively few cases when growth in agriculture and related rural industries has been respectable, large poverty-reducing effects, especially for that segment of the rural population working directly in the modern agricultural sector, have been documented. More importantly, fast agricultural growth has importantly contributed to diminishing poverty in urban sectors, particularly via the unskilled labor market (López and Anriquez, 2003). Subsistence and semi-subsistence farmers, certain rural ethnic groups and others, which in many poor countries constitute the majority of the rural population, have, by contrast, apparently received little benefits

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[1] Foster et al. (2002), for example, find that increases in agricultural productivity in India reduce forest areas more than proportionally. Several other studies confirm the negative impacts of agricultural expansion upon water resources and other environmental resources. See also Abdelgalil and Cohen (2001) and Dasgupta et al. (2001) among others, for empirical evidence on the environmental impacts of agriculture.

from agricultural growth.[2] This fact, in part, explains why rural poverty has remained high and intense even in middle-income countries (López and Valdés, 2000). It is thus paradoxical that rapid agricultural growth, whenever and wherever it has occurred, has been good for reducing poverty in non-rural areas but it has been less powerful in promoting higher incomes among the poorest segments of the rural population. The second question is now natural: Why has agricultural growth not benefited these groups?

The rate of growth of agricultural and other rural industries in many countries may have been just too slow to induce sufficient spillovers to benefit a broader segment of the rural population.[3] Until the early 1990s it was fashionable to ascribe this slow growth to large macroeconomic and trade policy distortions that kept agricultural commodity prices artificially low. Generous agriculture-specific policies only partially offset the effects of these macroeconomic policies (Krueger et al., 1991).

Several countries have, however, largely removed the macroeconomic distortions against agriculture while still keeping highly favorable sector-specific policies (World Bank, 2001). Input and credit subsidies, a favorable tax treatment of agricultural income, and large government expenditures in the sector have remained in place after the removal of the macroeconomic and trade distortions. Despite this, annual agricultural growth in the countries that adopted the reforms has rarely surpassed their historical 1–2.5% rates. Hence, the third question is the following: Why has such slow growth continued even in countries that have removed anti-agriculture macroeconomic biases? A complementary question is the following: Are there other remaining, perhaps more important, distortions that impair the ability of the sector to grow faster? Moreover, are these "other distortions" factors that explains the seemingly low effectiveness of even fast-growing agriculture to increase the income of important segments of the rural population that are not directly linked to modern agriculture?

[2] Binswanger and Deininger (1997) in their review of empirical studies found that, with the exception of a few Asian countries, small farmers typically experience few welfare improvements out of agricultural growth.

[3] According to the World Bank (2000), annual agricultural GDP growth over the last two decades has been about 2% in Latin America and Asia and negligible in Africa.

It is argued below that the poor performance of agriculture in many developing countries, the persistence of rural poverty, and a large part of the negative impacts of agriculture upon the rural environment are associated with a more fundamental distortion in the allocation of public expenditures that leads to a chronic undersupply of public goods. Investments in public goods get crowded out from government budgets by massive expenditures in subsidies to the wealthy and other expenditures in private goods that play no role in ameliorating market imperfections. In turn, the undersupply of public goods is at least in part related to political economy forces.

2. A conceptual framework

These three questions could, indeed, be interrelated. The conventional approach of assuming independent producers/consumers responding to and being affected by market price incentives is not useful, at least not in understanding some of the remaining, unsolved questions. The literature on market failure recognizes the existence of other interactions among individuals that tend to play a role in resource allocation and wealth distribution when markets do not exist or fail (de Janvry et al., 1991; Stiglitz, 1991).

Additionally, the political economy literature that emphasizes government policies and public expenditures for sale, which are directed to serve those that are able to pay for them, is another pillar of the ensuing analysis (Bernheim and Whinston, 1986; Grossman and Helpman, 1994). Ironically, in this view the allocation of public resources (through policies and expenditures) to pressure groups, in part arises out of the development of a "market": economic groups bid for public resources in the form of bribes, political contributions, etc., and the government allocates the prize to those willing to bid the most. The literature of collective action (Olson, 1965; Ostrom, 1990) is also central to the ensuing analysis. This literature emphasizes certain characteristics of social groups that may facilitate their ability to act collectively in search of common objectives, including rent extraction.

Some authors have argued that competitive lobbying by interest groups may lead to policies that increase growth and efficiency, at least under certain conditions (Becker, 1985). However, the implied conditions for

this to happen are quite unlikely to be satisfied in developing countries. On the contrary, competition for government policies and expenditures is *unequal* and leads to distortions and losses of output.

The distortions that are focused on here are not the traditional price-related distortions so popular in the economics literature. Instead, the distortions caused by the crowding out of expenditures in public and semi-public goods due to excessive government expenditures in private goods that are motivated by political economy considerations are addressed. The combination of interactions arising out of market failure and political economy mechanisms provides a powerful tool for understanding why governments systematically under-invest in public goods. This, in turn, causes agricultural growth to be deleterious for the environment while at the same time causing it to be too slow and too biased to induce significant welfare gains for subsistence and semi-subsistence rural producers and other agrarian communities.

Three key actors are considered:

(1) The commercial operators (C), comprising large and medium-sized producers (including farmers, agro-processors, and other large producers in related rural industries) whose production is market oriented, relying mostly on hired workers.
(2) Other producers (P); that is subsistence and semi-subsistence producers, comprising independent producers as well as communal producers who share part of their resources in common property. These producers are only partially integrated into the commodity markets, and rely mostly on their family labor for their subsistence. Unlike C producers, P producers generally have no legal rights upon their land, forest, and water resources, or at least face tenure insecurity.[4]
(3) The government (G). Apart from setting policies, the most important role of government is to allocate public expenditures, and to regulate the use and appropriation of public resources including public lands, forests, water, and other resources that are not subject to well-defined property rights.

A fourth group, a non-rural C (e.g., industrialists, financial entrepreneurs, etc.) that may affect policies and allocations to rural areas, could also be included, but is left out to simplify the analysis and focus on the rural sector. Therefore, the following is considered: *given* a fixed volume of public resources that G has available for rural areas, how is it distributed between C and P and what are the environmental and social equity implications of such a distribution? That is, a two-stage process is assumed: in stage I the overall level of support policies is set for the rural sector, presumably on the basis of competition between rural and non-rural lobby groups. In stage II, the public resources available for the rural sector are distributed by G through political allocations. The focus here is on stage II.

2.1. *"Buying" policies and public resources*

G has as an objective function to maximize the welfare not of society but of government bureaucrats themselves. One way of increasing the welfare of G is to elicit bribes from producers in exchange for favors in the form of orienting public resources to the producers who pay such bribes. G also attains welfare gains by directing policies and public resources in such a way as to increase social welfare.[5] Thus, the objective function of the government is a weighted average of the welfare of those who can bribe or provide campaign contributions to G, and the welfare of the rest of society. A measure of the degree of corruption of a government is the difference between the weight of bribe contributors in its objective function and the share of this group in the total population.

While most competition is assumed to take place through economic means (campaign contributions, bribing, etc), it is also possible to allow for noneconomic forms of eliciting benefits and policies from the government. The use of political organization, strikes, civil unrest, etc. is sometimes a recourse available to both C and P as a means to pressure governments. For the rural poor, however, with few exceptions, this recourse has not always been available in the past, in large part because of geographic isolation, poor

[4] The World Bank (1997) has reported that even in a relatively prosperous middle-income country such as Chile, over 60% of the small-size farmers do not have legal land titles.

[5] If C is a small minority of the population, as is normally the case in poor countries, then social welfare is ruled mostly by the welfare of group P where the majority of the population belongs.

communications, and low education levels. In addition, governments have frequently been able to use their repressive apparatus with few constraints to suffocate such political mobilization of the poor. As argued later, though, for various reasons these noneconomic instruments of pressure may become more prominent in the future. (In many cases the noneconomic instruments do not even need to materialize to become effective. It is enough that governments know that they exist as a last recourse to restrain the impact and effectiveness of economic instruments of lobbying).

2.2. *Imperfect capital markets and unequal competition in the lobby "market"*

Only C can offer bribes to G because unlike P, group C is able to exploit all profitable "investment" opportunities, including bribing G, in return for special favors. A key reason why C and not P can bribe lies in the capital markets. Capital market imperfections have been well documented in the literature, which has consistently shown that these imperfections lead to tight rationing of credit to small enterprises, including peasants.[6] Hence, P is assumed to have little, if any, access to capital markets while C faces no credit constraints at all.[7] This implies that group C individuals are more able to invest in bribing than those in group P. That is, capital market imperfections spill over into the political lobby "market" inducing severe inequities in access to government favors. Moreover, the fact that group C comprises relatively few individuals while group P consists of so many and dispersed households, makes it easier for C than P to lobby G in a coordinated fashion. This, of course, follows directly from accepted and empirically corroborated postulates of the theory of collective action.

Thus, there exists a highly unbalanced lobbying system where C, because of its wealth and access to capital markets, has the means to optimally invest in bribing G, and, because of its small group size has the ability to act as an interest group in a coordinated and consistent way vis-à-vis G. In contrast to C, P has neither the financial means nor the adequate group size and homogeneity to bribe G in the same way. The fact that in most developing countries government programs and policies for agriculture are distributed in a highly biased way, with the commercial sector receiving most of the benefits, is certainly consistent with this view (Binswanger and Deininger, 1997).

It is here where the synergy between political economy–corruption and market failure is most important: conventional models of political economy and bribery, when considering competition among individuals or groups for government favors, assume a level playing field, i.e., competition among individuals who have an equal or similar ability to pay bribes. These models generally ignore unequal competition where a segment of the private sector can bribe at a much lower cost than others. In the notation used here, competition on a level playing field may take place *within* group C, as individuals belonging to C are assumed to have similar access to capital markets. However, the interest is to focus on the highly unequal competition *between* groups C and P.

Recent empirical evidence shows that, contrary to conventional political economy postulates that emphasize competition among commercial producers for government favors, product- or commodity-based interest groups are unimportant determinants of government credit allocations while farm size is the key determinant (Helfand, 2001). Since competition *within* group C is likely to be reflected in commodity-based competition, while competition *between* C and P producers is probably better reflected in land size (which may be considered a good proxy for wealth); this evidence is highly consistent with the emphasis on C–P (unequal) competition rather than competition within C as the driving force behind government policies.

2.3. *The lobby market and efficiency: the conventional view*

The highly unequal competition for government favors leads G to bias the allocation of public policies and expenditures in favor of C (and against P). This biased allocation not only has obvious distributional effects, but also negative efficiency effects. The conventional argument that political lobbying may not

[6] Helfand, 2001, for example, shows that credit availability in Brazil was heavily biased in favor of large-scale farmers; Baydas et al., 1994 show similar findings for Ecuador.

[7] A common way of modeling capital market imperfection is to assume that the borrowing capacity of households is equal to a fraction of the household's wealth. Since C has much greater wealth than P, it is natural to expect that C will have access to much more credit than P.

have deleterious efficiency effects assumes that individuals or groups lobby because they can obtain large benefits, while individuals who get less out of government expenditures or policies will lobby less intensively. The implication, of course, is that if lobbying takes place in an environment of perfect competition, it will cause an allocation of government resources to those that obtain the highest marginal value out of them. That is, the outcome of the political economy process would be efficient.

2.4. The lobby market and efficiency: the role of unequal competition

Of course, when lobbying is not exactly a competitive activity, but on the contrary is subject to dramatically unequal competition, there could be many uses of government resources that have a higher marginal value but are not funded simply because those who would benefit from them do not have enough capacity to lobby the government. More importantly, there is a tendency to demand from the government the provision of private goods instead of public or semi-public goods. In fact, C will have little incentive to spend on lobbying efforts for the sake of public goods that by definition cannot be privately appropriated. This causes crowding out of public expenditures within the limited public budget and, consequently, scarcity of public goods, which are important factors of production. Moreover, public goods are usually complements rather than substitutes of private investment.

Hence the efficiency losses are double: (1) A loss due to the wrong allocation of government expenditures to producers that may obtain a low marginal product out of those resources to the detriment of producers that could get higher marginal products; (2) A loss due to a misallocation caused by supplying too few public goods (see López, 2003 for an analysis of the economic growth effects of this). Apart from the efficiency effects, unequal lobbying may have severe social equity impacts. It is also likely to dramatically exacerbate environmental degradation caused by agriculture. These issues are further discussed in the next section.

2.5. Equity and environmental consequences of unequal political competition

Unequal competition in the political lobby market causes the allocation of public expenditures to be biased in favor of private goods benefiting C and against the provision of public and semi-public goods, many of which are vital to the welfare of P. Provision of public education and health care, both key public or semi-public goods, is important for P to enhance their human capital and, consequently, their ability to increase income. This is particularly important for poor households that are unable to access these services through the private sector. Even if the rate of return of human capital for these households is high, they are unable to invest in these assets unless the public sector provides them at low cost. Capital market failures generally prevent poor households from accessing credit to finance profitable investments in human capital and, hence, in the absence of government intervention, these households are unable to acquire human capital from the private sector. The under-supply of public goods leads to low investments in human capital by poor households and, consequently, adversely affects their income potential. Thus, unequal competition in the lobby market, which originates in unequal wealth distribution and capital market failures, further worsen social equity.

A component of the public goods menu is the provision of public protection of the environment through public investments in protection and rehabilitation of ecosystems, as well as in the creation of institutions that mitigate environmental externalities. A frequent manifestation of the crowding out of public investment by the provision of subsidies and other private goods is the minimal provision of environmental public goods and institutions. Thus, an obvious implication of the government's emphasis on supplying private rather than public goods is the lack of investment in the environment and the lack of monitoring and enforcement of environmental regulations. This makes environmental and natural resource degradation much more likely. Natural resource degradation also has second-round negative equity effects, as the poor are more dependent on such resources than the non-poor and, consequently, producers P have their income potential reduced.

2.6. Biased public expenditure allocation and private investment

The biased composition of public expenditures has two conflicting effects upon private investments. On the one hand, the high emphasis by government on subsidies and the supply of private goods may, under

certain conditions, be an incentive to invest more. On the other hand, the low supply of public goods reduces the marginal returns to private investment over the long run. The profitability of private investment in the long run depends on an adequate supply of public goods, including human capital, infrastructure, and natural resources. In the long run the slow growth of human capital and the degradation of natural capital reduce the incentives for private investment as the marginal returns to private capital are not supported by an adequate growth of public factors of production. Private capital and public assets are, therefore, highly complementary factors of production (World Bank, 2000; López, 2003).

The net effect is, in principle, ambiguous. However, there are conceptual reasons to expect that the investment-promoting effect (the first effect) is likely to be weak (see below). This theoretical prediction is corroborated by empirical studies discussed later, which show that the strength of the first effect is indeed quantitatively small as most public subsidies in reality promote greater consumption by the wealthy instead of more investment. By contrast, emerging evidence regarding the investment-inhibiting effect of subsidies (the second effect) suggests that it is quite large (World Bank, 2000). Thus, the net effect of biasing the structure of public expenditures in favor of private goods and against public goods is not likely to promote growth.

2.7. *The double crowding out*

Unequal competition for government expenditures and policies leads to the crowding out of investments in public goods within the limited government budget. There is, however, a second type of crowding out: as a consequence of the subsidized provision of private goods by the government, group C may invest less, not more as superficial analysis would suggest. The reason is that the goods provided by the government are usually substitutes for private investment, and thus much of the support of government to agriculture may have little net effect on agricultural growth. In fact, much of the investments made by the government in response to lobbying by C would be implemented by the private sector itself if it were not for the knowledge that the government provides them at a much lower cost to them.

Consider what is often regarded as a "desirable" subsidy; the government offers to pay a portion the costs of a particular investment. Assume further the best possible circumstance in terms of the allocation of the subsidy. The subsidy is, of course, rationed as the funds are obviously less than the demand, but their allocation among producers is transparent, not subject to corruption. Consider an investor that is able to extract a profitable return out of an investment (even in the absence of the subsidy) that potentially may qualify for the subsidy. Suppose that in that year there was a large demand for the subsidy and that the investor was not lucky enough to get the subsidy. The producer may go ahead with the investment (and never get the subsidy) anyways since it is a profitable investment. Alternatively, she/he may opt to postpone the investment and try again next year in the hope of then getting the subsidy. If the expected value of the subsidy is sufficiently large to compensate the foregone profits in one year the producer may decide to delay the investment.[8] Thus, investments that are privately (and socially) profitable may be postponed as a consequence of the existence of the subsidy.

Among the investors that actually get the subsidy there are two types. Those that would have implemented the investment anyways and those that would have not (because they would not be able to get high-enough returns) but they, in fact, invest because they got the subsidy. For the former the subsidy was ineffective—the subsidy is likely to promote more consumption by them rather than more investment as intended. For the latter the subsidy was effective in causing them to invest but at a low social return. Thus, the subsidy scheme does two things, it increases consumption of some producers and it causes a reallocation of investment from producers that are able to obtain high (private and social) rates of return to the investment to producers that obtain a low social return. The net effect on total investment is ambiguous, but the efficiency impact is negative.

The above example is not just a curiosity. It illustrates a phenomenon that has received important empirical support in recent years. That subsidies, at least

[8] Suppose the subsidy is 50% of the value of the investment cost and the rate of return per annum of the investment is quite high, 20%. Assume further that the producer estimates that the probability of getting the subsidy in the next year is 0.5. If the producer is risk neutral he/she will decide to delay the investment by one year.

in the form in which they are usually allocated, do not generally promote investment or more R&D has been shown by several studies in various countries. Empirical studies using detailed firm-level data by Bregman et al. (1999) for Israel, Fakin (1995) for Poland, Lee (1996) for Korea, Estache and Gaspar (1995) for Brazil, and several others have shown that subsidies and corporate tax concessions are at best ineffective in promoting investment and technological adoption and, in some instances, even counterproductive. Crowding out of private investment as a consequence of the subsidies occurs.

3. How public expenditure allocation biases are manifested

There are two broad types of interventions that tend to have negative effects upon both the environment and the poor (and detrimental effects on overall growth of agriculture).

First are "development expenditures." In most cases these are fiscal incentives that only (or mostly) C can access, such as tax exemptions (available only to those who pay taxes, generally belonging to C) and credit subsidies (available only to those who can access credit). Outright financial grants to certain projects, publicly funded infrastructure such as dams, targeted mostly to increase the wealth of C with sometime negative impacts upon P, are also considered "development expenditures."[9] Examples of "development expenditures" are the massive fiscal incentives currently underway for the development of the Brazilian Amazon region and the promotion of tree crop production in the outer islands in Indonesia.[10]

"Development expenditures" basically constitute a give-away of public resources for the obvious benefit of C, with ambiguous indirect impacts upon P. These programs cause efficiency losses due to a significant misallocation of public resources: these fiscal resources are generally invested in *private* goods while its opportunity cost is the foregone investment in *public* goods. When the government decides to invest one dollar in private goods (directed at C), it is one dollar less to be invested in education, health, the environment, and other public and semi-public goods. It happens that the dividends of investments in true public or semi-public goods accrue more directly and in a much greater proportion to P than "development expenditures," which only indirectly (mostly via employment effects) *may* benefit P.

An important component of the "development expenditures" are transfers (to C of course) in the form of free access to natural resources that are owned by society as a whole, such as forests, water resources, and others (Binswanger and Deininger, 1997). The fact that these natural resources are potentially available to C at little cost promotes greater lobbying efforts by C to persuade G to open up access to more public natural resources. Knowledge that irrigation water, for example, can be obtained from public irrigation projects at little or no cost induces C to spend more effort to cause G to finance public irrigation projects. These projects often have low social rates of return but high private rates of return (to be appropriated by C). The main reason why the private rate of return is high is simply that C usually pays only a minor fraction of the cost of water. Similarly, the fact that forest lands can be accessed at about zero price is an incentive for C to spend greater efforts and money to "bribe" the government into building more infrastructure and services in forested areas. Again, these projects often have low social returns but high private rates of return for those that are able to appropriate their (usually short-term) economic benefits.

Thus, the almost universal tendency to give away state natural resources (lands, water, mines, etc.) at almost no cost has not only distributional impacts (usually regressive, as those who gain such free access are in group C and not in P), but also resource allocation effects and negative environmental impacts. This is due to the fact that the opening up of new lands for agriculture is *not* exogenous but is at least in part determined through the system of bribes, lobbying, and influence peddling. If these decisions can be bought, the perspective of zero cost for the use of natural resources greatly increases the lobbying efforts of C to promote such opening up of new frontiers.

Second are government omissions. Governments sometimes fail to prevent the usurpation of land and

[9] Three recent publications provide empirical support regarding the large size of public subsidies that are detrimental for development: Asher, 1999; Myers and Kent, 2001, and Van Beers and de Moor, 2001.

[10] See Calmon (2003) for evidence about the new type of fiscal incentives that encourages "development" and deforestation of the Amazon Region.

other resources by P. A classical example is enclosures, where land held by communities (usually in common access without formal legal titles) becomes valuable for commercial interests. Usurpation of the land and expulsion of the peasants without compensation happened in the early stages of the industrial revolution in Europe. It happened in the eighteenth and nineteenth centuries in the United States and Latin America with native lands and still happens today in poor countries whenever resources of P become valuable to C.[11] In most cases, governments do little to protect P or to enforce compensation for the lost resources. The implication is that the poor end up paying part of the costs of economic growth.

Government omissions are also ominous causes of environmental degradation. Failure to enforce existing environmental regulations is apparently a more important cause of environmental destruction than lack of or insufficient regulations. Lack of environmental enforcement is usually attributed to insufficient funding and institutional capacity. This explanation is, of course, superficial. Lack of funding and capacity for environmental enforcement corresponds to a lack of priority in governments who find it more appropriate to devote their efforts to other activities, including those described above.

The almost complete lack of enforcement of environmental regulations unambiguously allows for greater profits for C, rapid resource degradation, and greater environmental losses. For P, it has at best an ambiguous impact: it may cause greater employment of the poor by C and perhaps some short-term benefits as producers, but most of the long-run effects are clearly detrimental to P. Unlike C, the poor are more dependent on natural resources as a source of income and have more restricted opportunities outside the rural sector. The (short-run) dividends of degrading the rural environment are obtained largely by C, while most of the (long-run) costs are paid by P.

4. Under-investment in public goods: empirical evidence

Governments in developing countries systematically under-provide public goods as a result of the political lobby that gives incentives to politicians to spend public resources in private goods instead. Yet there is empirical evidence showing that two important public goods, education and agricultural research, have extremely high rates of return while at the same time governments have reduced rather than increased investments in such goods.

The literature reports such high returns with an amazing degree of consensus for many countries around the world. Investments in formal education (especially in secondary education), agricultural research, agricultural extension, and investments in the management of certain natural resources is reported to have extremely high rates of return. The permanence of such high returns *per se* does not necessarily reflect underinvestment, mainly given the existence of significant non-convexities. Non-convexities may imply that the marginal returns to these assets do not necessarily fall or that they decrease only very slowly with their accumulation. Thus, if this is the case, even a rapid accumulation of the assets would do little to reduce their rates of return. However, given such high returns, one would expect a great emphasis from governments on investment in such assets. Yet this is not the case. In fact, in the majority of the developing countries, investment in human and environmental assets has not even kept up with population growth. That is, per capita human and environmental wealth appears to be declining.

4.1. High rates of return to education

Two recent surveys have reviewed returns to education, one by Psacharopoulos (1994) and another, an update of that survey, by Psacharopoulos and Patinos (2002). They report findings of hundreds of studies around the world that have used a variety of methodologies and diverse data and over different time periods over the past three decades or so. Despite this variability in data, countries, and methodology, there is a high degree of homogeneity in the results for most countries. In fact, the calculated rates of return found in the majority of the countries analyzed are extremely high. The average private rate of return for investment in primary education is about 30%, while the average social rate of return was about 20%. For many countries the social rates of return reach levels in excess of 30%.[12]

[11] For many recent examples in Latin America and throughout the world see Kates and Haarman (1992).

[12] Examples of most recent studies include Brazil (35.6% for primary and 21% for higher education); Uganda (66% for primary

The returns to primary and secondary education are both below 15% in only a handful of countries. In addition, from the evidence for countries that have more than one study, it follows that in the majority the rates of return to education have not declined over time.

Many projects that are implemented in developing and developed countries have much lower *ex ante* rates of return. Despite these high rates of return, in many developing countries high school drop-out rates are substantial, especially at the late primary and high school levels in rural areas. Even in middle-income countries such as Chile, Brazil, and Mexico, high school drop-out rates reach 40% to 50% (World Bank, 2000).

4.2. High and increasing rates of return to agricultural research and extension

A survey by Alston et al. (2000) reviewed almost 300 studies that evaluated social rates of return to agriculture research and farm extension in about 95 countries. The methodologies and data used varied dramatically across the many studies. The simple mean (social) rate of return for agricultural research among all studies in developing countries was over 50%, while the mean rate of return for public expenditures in agricultural extension was even higher, of the order of 80%. In most countries these rates rarely fall below 30%, still obviously a fantastic pay-off. Exploiting the fact that there are many countries for which there is more than one comparable study available, the authors conclude that, as in the case of returns to education, there is no evidence to support the view that the rates of return have declined over time. Despite this massive social profitability, studies often report that, with few exceptions, countries are not expanding agricultural R&D and many have indeed cut them back drastically.[13]

4.3. Investment in human capital, R&D, and the environment lag behind population growth

The emerging literature on "genuine savings" provides a clearer picture of the real changes in wealth over time.[14] The World Bank has provided estimates of genuine investment for many countries by adding net investment in human and natural capital to the estimates of net investments in physical capital (Hamilton, 2003). Apart from extending the analysis to more than 110 countries, an important modification over the previous estimates of genuine savings made by the World Bank is that now measures of change of net wealth are expressed on a per capita basis. Per capita rather than total wealth change is an adequate and consistent measure of welfare change (Dasgupta and Maler, 2002). The measure of per capita genuine savings as defined by Hamilton in his country estimates equals net investment in manufactured or physical capital minus depletion of natural resources plus net investment in education, health, and R&D.

The estimates for 1997 show that out of 90 low- and middle-income countries in Asia, Africa, and Latin America, 71 (or about 80% of them) exhibit negative per capita changes in wealth. While these estimates cover a large sample of countries, the fact that they refer to only one year raises the question of how representative this year might be. An analysis using the same definition of wealth as Hamilton but that covered a 20-year period was performed by Dasgupta (2003). Five Asian countries (Bangladesh, India, China, Nepal, and Pakistan), and 20 countries in sub-Saharan Africa over the period 1973–1993 were considered. This analysis shows similar results to Hamilton's. Not only has sub-Saharan Africa experienced a decrease in per capita net wealth; four of the five Asian countries also showed negative per capita wealth changes. The only exception is China, which has managed to accumulate wealth faster than its population growth.

The majority of the countries considered by Hamilton (2003) and Dasgupta (2003) show positive per capita growth rates for physical capital, implying that the reason for the negative growth rates of total

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and 28.6% for secondary education); Morocco (50% for primary and 10% for secondary education); Taiwan (27.7% for primary and 17.7% for higher education); and India (17.6% for primary and 18.2% for higher education). These are social rates of return, with the exception of India. Private rates are even higher.

[13] The case of Peru is illustrative. In the mid-1990s the government decided to privatize agricultural research. The government sold 21 agricultural experimental farms where most of the agricultural research in the country was performed. The result was that by the year 2000, 20 of the 21 experimental stations had been transformed into commercial farm operations, and agricultural research in Peru has practically become extinct.

[14] Genuine savings is a national accounting aggregate designed to measure the net change in total assets including human and natural capital, in addition to the standard national accounts measures of change in physical and financial capital.

wealth is that human, knowledge, and environmental assets are growing at a rate below that of population. By implication, therefore, some 80% of the countries considered are experiencing reductions in their per capita human and environmental wealth. Since at least some countries may be compensating the declines of human and environmental assets with positive per capita growth in physical assets, the number of countries experiencing declines in human and environmental assets may be even larger.

The high rates of return to public goods and the fact that, notwithstanding such high rates of return, government investment in public goods has not even kept pace with population growth is a clear indication that the supply of public goods is insufficient. At the same time, governments spend a large share of their budgets on subsidies and other private goods. According to Van Beers and de Moor (2001), developing-country governments spend in total more than 6% of their countries' GDP and more than 30% of government revenues on subsidies, many of them environmentally perverse. A few recent country studies reach similar conclusions. Based on estimates by Calmon (2003) for Brazil, for example, it is possible to calculate that almost 50% of all public expenditures in the rural sector by the federal government is indeed subsidies to mostly large commercial operators and speculators.

A few studies have provided an evaluation of the impact of such subsidies. Bregman et al. (1999), Estache and Gaspar (1995), Lee (1996), Oman (2000), and World Bank (2000), among many others provide empirical evidence from many countries showing that government subsidies not only mostly benefit the wealthy, but also that their effectiveness in promoting more investment and output is low. Government subsidies effectively increase consumption of the wealthy instead of promoting more investment. That is, unlike investments in public goods, the rates of return of government expenditures on subsidies are low. Governments spend little in goods that have large social rates of return (public goods) and instead, they spend a large share of their budgets in goods with dubious rates of return (private goods). The conclusion is obvious: The composition of public expenditures is socially inefficient. That is, income will increase if governments reallocate public expenditures from private to public goods. This is the key distortion that is emphasized in this article.

4.4. Subsidies and agricultural growth: new empirical evidence

A recent study by López (2004) has analyzed new detailed panel data on the allocation of rural public expenditures elaborated by FAO for ten countries in Latin America for the period 1985–2000.[15] López, using various econometric approaches, has shown that the allocation of public expenditures is a key element in explaining agriculture per capita agricultural GDP, rural poverty, and land expansion of agriculture into frontier (often forested) areas.

The key findings are: (i) The countries in the sample devote a large share of the total expenditures in the rural sector to nonsocial subsidies, on average about 50%; (ii) Subsidies have a negative and highly significant effect on per capita agriculture GDP. Even a modest reduction of the share of subsidies in total rural government expenditures may cause a major increase in agricultural per capita GDP: Reducing the share of subsidies from 50% to just 45% may cause a permanent increase of agriculture GDP of 2.3%; (iii) Subsidies dramatically contribute to worsening poverty and to increase in the reliance of agriculture growth on area expansion rather than on intensification.

5. Back to the original questions: new insights?

Agricultural growth is more environmentally destructive than it needs to be because G gives away the environment to C in exchange for bribes and political contributions. Growth of agriculture and other rural sectors (in C) creates jobs for part of the unskilled and in doing so it improves labor market conditions for the poor. However, for rural subsistence and semi-subsistence producers that are not absorbed into the labor force working for C, agricultural growth hardly creates any benefits. While income growth of group C is complementary with income improvements of hired workers, in large part it competes through nonmarket mechanisms with subsistence and semi-subsistence peasants and communities. That is, part of the expansion of the "modern" C sector is financed by the losses of P. In addition, due to the double crowding-out effects

[15] The ten countries are: Costa Rica, Dominican Republic, Ecuador, Honduras, Jamaica, Panama, Paraguay, Peru, Uruguay, and Venezuela.

induced by public policies, large inefficiencies prevail causing growth in C to be too slow to absorb a greater part of the rural labor force in that sector and causing stagnation for P.

Does this mean that agricultural growth is always detrimental to those unable to benefit from greater job opportunities in C? The answer is, of course, no. Our hypothesis is that the impact of agricultural growth upon poor self-employed or mostly self-employed rural households greatly depends on how growth in C originates. If the instruments used to promote economic growth are those discussed above (which unfortunately appear to be most pervasive across the developing world), growth is likely to be too slow to benefit many of the rural poor and is effectively partly financed on the backs of the poor. If, instead, growth were induced through greater investment in truly public or semi-public goods relying on more neutral policies, then both its rate (and its stability over time) and its poverty effects would to be more desirable.

Similarly, agricultural growth has so many negative environmental consequences because of the biased instruments used to promote growth of the preferred groups at all costs. If, instead, more neutral instruments were used and government public allocations emphasized public and semi-public good investment as an engine of growth, the environmental consequences of agricultural growth would be more benign. Thus, an important insight following from the analysis is that to understand the implications of growth the focus needs to be not only on the speed of growth but, more importantly, *on the sources and instruments used to promote such growth.*

6. How globalization affects nonmarket interactions

Understanding agricultural growth within a political economy-cum-nonmarket interaction framework provides some unexpected implications concerning the potential long-run consequences of globalization. A key implication of the analysis presented above is that many of the negative impacts of agriculture upon the environment and the poor arise out of a highly unequal system of accessing government resources by the economic elites vis-à-vis the poor. Some of the influences of globalization may in fact contribute to soften such unequal political power while others may worsen it.

Globalization usually involves several things, three of which are considered here: (1) more openness to international trade in goods, services, and capital; (2) greater exposure to international norms and patterns of quality for internationally traded goods and services, mostly imposed by developed countries; (3) greater integration of civil society into international information, international networks, participative and democratic values.

6.1. Trade liberalization

Increased trade openness has often implied dramatic changes in relative prices that have caused significant changes in the economic power within the rural sector. Traditionally dominant groups within C have become less able to influence government policies while new power groups have emerged. Also, to the extent that a significant part of the agricultural sector increases its profitability, the stakes of the peddling game get bigger. One could expect increased lobbying efforts to attract an even greater share of the government-controlled resources by C as these resources now, with freer trade, have a higher rate of return. Hence this, *ceteris paribus*, may induce an even more biased allocation of public resources to the private goods accessible to C to the detriment of the provision of public goods. That is, the pure trade liberalization component of globalization may exacerbate the low effectiveness of agriculture to reduce certain forms of rural poverty and anti-environment consequences.

6.2. International norms and standards

Developed countries impose international standards and norms affecting exports from developing countries. These norms usually concern sanitary, environmental, and child labor use. Some of them satisfy genuine objectives while others are simply hidden ways of protecting the domestic industries in developed countries. Apart from formal official norms there exist informal certification procedures to which a segment of the importers in the industrialized countries adhere.

What are the consequences of integrating a developing country into the system of environmental international norms that effectively internationalizes

enforcement? As indicated earlier, governments provide little enforcement of environmental laws as a consequence of their desire to benefit C for the sake of bribes or as a means of accelerating "growth." This failure to enforce norms not only makes growth less environmentally friendly but also affects the poor (especially the subsistence and semi-subsistence households and communities) who generally are most dependent on natural resources for their subsistence. External enforcement of environmental norms affecting export industries tends to be stricter than domestic enforcement. In some instances this leads to substantial improvements in the management of pest control and fertilization, often inducing lower doses, the use of less toxic products, and their application at more opportune times. Thus, increased integration into global markets may be a good substitute, under some circumstances, for a lack of domestic enforcement, making agricultural growth less environmentally taxing and, sometimes, less harmful to the rural poor.

6.3. Globalization of civil society

This is perhaps the most important impact of globalization expected within the conceptual framework used in this analysis. As discussed above, part of the power of the elites is manifested in their ability to dispossess the rural poor from part of their land and other resources as they become commercially valuable to them. Native communities have historically felt the impact of this process that has been either implicitly or explicitly supported by governments. Globalization makes this harder to occur as exposure of these events to international public opinion could generate accusations of human rights violations that make the government liable to international trade sanctions and boycotts. In general, dictatorships and human rights violations are increasingly less accepted at the world level. Moreover, because globalization causes greater international trade dependence, such violations can now be more easily punished through trade bans and the like.

Greater openness to democracy and more constraints upon government imposed by international attention usually imply more participation of civil society in public decisions and less leeway for political and military repression. (Would the Zapatista movement in Mexico have been tolerated 20 or 30 years ago, when Mexico was not yet fully integrated into global markets? Would the Sem Terra movement in Brazil have been able to avoid heavy government repression 30 years ago?)

This greater political freedom has consequences for unequal competition in the political economy process discussed earlier: The poor can only counter the enormous advantage that the elites have in influencing the government through political organization and pressure that could go all the way from greater participation in elections and civic movements to strikes and riots. In the past, these direct political instruments have generally not been available, either because of a lack of institutional capacity among the poor and a lack of participative mechanisms or, more often, due to the threat of government repression. Globalization has led to the increased capacity of the poor to organize and participate in international networks that have greatly increased their knowledge and ability to organize through both financial and technical support from abroad (many indigenous organizations have, for example, emerged in Latin America in the 1990s, several of them with strong international links). This tends to partially overcome the first constraint that the poor face: lack of knowledge and lack of institutions to channel their pressure. In addition, the restricted ability of governments to repress tends to reduce the second constraint the poor face: They now have the ability to pressure governments through organized political responses when governments affect their interests.

Thus, an important effect of globalization can be to reduce the imbalances that exist between the poor and the elites in their capacity to lobby governments. This may lead to policies that are slightly less biased toward the latter, which is often translated into greater pressure to increase the supply of public goods. Given the current severe under-investment in public goods, an increase in its supply may be translated not only into faster growth but also into greater social equity and less environmental pressures associated with growth. That is, a broadening of the scope by which government lobbying may take place, may allow for more even competition between C and P. This, in turn, could make the outcome of the lobbying process more consistent with economic efficiency as predicted by Becker (1985) and his followers. Despite progress toward democratization, civil participation and greater tolerance of political action by the poor, however, it is questionable

whether outcomes of economic efficiency, social equity, and environmental sustainability can be achieved solely by the potential balancing effect upon the political process that globalization may bring about.

7. Final remarks

Large historical inequities have led to a strong dichotomy where a small rural elite is able to bias the allocation of government expenditures and policies in their favor and to the detriment of the majority of poor and semi-poor farmers. This has not only distributive implications but also efficiency effects as a consequence of the biased structure of investment that it induces—too few public goods and too many government-provided private goods. Thus, there is a double crowding out: Crowding out of expenditures in public goods within the limited government expenditure budget, and the crowding out of private investment through government-subsidized provision of private goods. The result is under-investment in public goods such as the environment, education, health, and social security with negative consequences for growth, the environment, and the poor.

The key factor behind the above process is the highly unequal capacity of the poor vis-à-vis the elites to lobby governments. Globalization may contribute toward reducing such inequality, but without strong pressure from international organizations, explicitly targeting greater social participation, transparency, and democratization, real progress toward economic efficiency and toward policies that make growth environmentally sustainable and more pro-poor is likely to be slow. Similarly, there is a need to change the composition of the investment mix financed by international organizations toward a greater provision of public and semi-public goods and away from investments in private goods that usually reinforce the power dominance of the elites.

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