Markets, Institutions, and Forestry: The Consequences of Timber Trade Liberalization in Ecuador

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Summary. — Although barriers to international trade were removed during the 1990s, log prices remain inefficiently low in Ecuador. Oligopsonistic conditions, which prevailed in the forestry sector under protectionism, have not been relieved by increased competition. The problem is that new investment is discouraged by weak property rights, corruption, and dated legislation that hinders forest dwellers’ participation in the market economy. Unless and until institutional reform is undertaken to stimulate investment and competition, the prospects for Ecuador’s tropical forests, which are among the most biodiverse in the world, will continue to be bleak. © 2000 Elsevier Science Ltd. All rights reserved.

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1. INTRODUCTION

It is generally conceded that interfering with international trade in timber and wood products often diminishes the incentives for forest conservation and timber resource development (Repetto & Gillis, 1988). In particular, economic growth strategies predicated on import-substituting industrialization (ISI), which every Latin American nation has pursued at one time or another since the late 1940s, has rendered forestry financially unrewarding. For example, log export bans and related impediments to trade, though rationalized occasionally on environmental grounds, have been put in place mainly to keep raw materials cheap for domestic wood processors. Inevitably, these policies have had a depressing impact on the value of standing timber, which in turn has discouraged the development and application of good management practices.

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In light of the damage done by ISI, freer trade ought to result in higher stumpage prices. This should, in turn, lead to an improvement in forestry incentives, provided that property rights in tree-covered land are secure and policies for containing the environmental damages of logging are in place. In Ecuador, which is the geographic focus of this paper, tariffs have been cut and restrictions on log exports have eased. But, domestic timber prices, which have risen somewhat, remain well below efficient levels. The reason for the persisting gap is that the forestry sector suffers from a severe lack of competition. Investment by new firms is not occurring because property rights are weak and because corruption, which has been exacerbated by the recent proliferation of environmental controls, is rampant. Furthermore, the Comunas Law of 1937 and other legislation make community organizations, which own extensive tracts of tree-covered land, unattractive as partners in joint forestry ventures. Under these circumstances, the few enterprises that established themselves in the forestry business during the ISI period still face very little competition in domestic timber markets, and therefore pay little for raw materials. It is no accident that renewable resource mining continues to be a salient feature of Ecuadorian forestry.

As is emphasized in this paper, effecting the institutional reforms needed to stimulate the competition that can in turn improve incentives for sustainable timber production is proving to be a very great challenge.

2. TRADE LIBERALIZATION

Ecuador has made much progress in recent years toward barrier-free international trade. Formerly quite high, tariffs have been cut dramatically. A 2.0% ad valorem salvaguardia is assessed on all imports and exports. There is also a 0.5% charge on all international transactions that yields revenues for a Childhood Development Fund (FODINFA). Otherwise, no tariffs apply to trade with the other two members of the Andean Group: Colombia and Venezuela. There are preferential rates for all goods bought from or sold to Chile, Peru, and Uruguay and for selected products shipped to or from Brazil. The average tariff on all other trade is less than 10%. In addition, quotas, licensing requirements, and other restrictions are much less burdensome than they used to be.

Consistent with overall policy reform, governmental interference with international trade in timber and wood products has declined substantially. Vestiges of the ISI regime are reflected in lower tariffs being charged for raw timber—5.5%—while higher rates—15.5% to 20.5%—must be paid for imports of plywood and other finished products. The latter rates, however, are a small fraction of those applied through the late 1980s. They are also comparable to US and Japanese tariffs on imported plywood.

For many years, nontariff impediments to international trade were a fundamental feature of Ecuadorian policy toward the forestry sector. Article 48 of the 1981 Forestry Law, for example, prohibited all log exports other than small shipments used in scientific research. Article 46 stipulated tight control of crossborder sales of semi-elaborated products and granted wide latitude to the Minister of Agriculture to approve or to disapprove imports and exports. But consistent with changes taking place in other sectors of the Ecuadorian economy and throughout Latin America, a switch to a more liberalized regime started to occur 10 years ago. Especially significant was the Export Facilitation Law of 1989, which among other things was supposed to supersede Articles 46 and 48. Implicitly, the new legislation removed all export limits, aside from those on the foreign sale of species in danger of extinction.

No part of the 1981 Forestry Law has been formally repealed, even though there are inconsistencies with newer legislation. Apparently for this reason, bureaucratic acceptance of market liberalization was grudging for a number of years. Illustrative of the problem is an incident that occurred in June 1994, which was five years after the Export Facilitation Law had been passed. The Director of the National Forestry Institute (INEFAN) received a telephone call from the frustrated owner of a teak plantation. Harvesting the teak, which is not native to Ecuador, and selling it to a foreign buyer, as the owner wanted to do, involved no biodiversity conservation issue of the sort warranting state intervention. Nevertheless, one or more employees of the Agriculture Ministry (MAG) were prohibiting the transaction from going forward, evidently seizing on the old Forestry Law. To break the impasse, the Director had to request the Minister's personal intervention, which occurred. Clearly, a marked discrepancy persisted between the
general policy of free trade and actual bureaucratic conduct (Salazar-Canelos, Southgate, Camacho, Stewart, Barreto, & Arguello, 1998).

In part to clarify that restrictions spelled out in the 1981 Law had, indeed, been overridden, INEFAN put in place new regulations governing the use and management of timber in early 1995. But as indicated later in this paper, the main consequences of this initiative has been to worsen the corruption problems that help to deter new investment.

3. IMPACTS ON PRICES AND PRODUCTION INCENTIVES

When and where commerce is restricted between a small economy, like Ecuador's, and the outside world, lack of competition is bound to be a chronic problem. In many markets, domestic demand can accommodate the output from, at most, a handful of firms. These firms, needless to say, are in an excellent position to exercise monopoly power, paying less for raw materials and other inputs and charging more for output.

In the past, tariff- and nontariff barriers to exports and imports directly impeded free competition in the Ecuadorian forestry sector, which was dominated by a small number of industrial enterprises. Timber prices were pegged well below international values, and the prices charged consumers for plywood and other finished products exceeded what they would have paid had competitive market forces been given free rein.

As one would expect, the elimination of trade barriers has affected nominal protection rates (NPRs)—defined as the difference between domestic and border prices divided by border prices—for the output of Ecuadorian wood products firms. As recently as 1991, the NPR for plywood, for example, was 70% (Southgate, Stewart, Molinos, Guerrón, & Kernan, 1993). But because of the policy reforms described in the preceding section, the gap between domestic and international prices is now largely closed. Using wholesale price data collected in late 1997 from a half-dozen producers and vendors based in Quito, we have calculated NPRs for plywood of $4 to +26%, depending on thickness and other product features (Salazar-Canelos et al., 1998).

Compared to what has taken place in product markets, progress toward greater competition and efficiency in markets for raw materials has been disappointingly modest. True, differences between domestic and efficient prices have started to diminish. Thirty household heads engaged in logging in the vicinity of Borbón, a major timber marketing center in northwestern Ecuador, were interviewed in October and November of 1997. These individuals reported that average commercial values of industrial-grade logs had increased during the preceding months, from $30 to $47 per cubic meter. The more recent value, however, compares poorly with what would be observed if the country's markets were performing efficiently. Our analysis suggests that, given current values of timber in international markets and transportation expenses between ports on the Ecuadorian coast and Borbón, logs should be bought in that town for approximately $136 per cubic meter, which is nearly three times the current price. In other words, the NPR is approximately −65%. Negative nominal protection for sawnwood is comparable, between −54 and −76%. Boards made from champú and other tropical hardwoods change hands for about $80 per cubic meter in domestic marketing centers. With due accounting for internal transportation expenses, the price in those centers should be $366 to $378 per cubic meter (Salazar-Canelos et al., 1998).

Depressed log prices have weakened incentives for forest management. The net returns of that activity are difficult to ascertain since there is no information in Ecuador about timber growth under different forest management regimes. Assuming, conservatively, that annual growth averages one cubic meter per hectare, one can estimate net returns for two extraction regimes. One, which is not capital-intensive, is employed by the 30 surveyed households, who all happen to be located close to navigable rivers flowing toward Borbón or some other marketing center. The other, which is mechanized, must be used where floating logs to market is not an option. As indicated in Table 1, net returns are negative—or perhaps slightly positive in a few sites very close to markets and water transportation routes—at the prices being paid for logs in late 1997. Timber management in a non-riparian setting is even less remunerative, net losses of nearly $35 per hectare occurring when output is sold for $47 per cubic meter.

Among the possible impacts of higher prices would be the improvement of management practices, which would raise yields and hence revenues, although no scientific basis for
estimating this impact currently exists in Ecuador. Accordingly, our analysis of the consequences of increased log prices rests on the conservative premise that yields will not rise above current levels, which are quite low. This analysis suggests that higher prices could encourage sustainable timber resource development, although such an outcome is not guaranteed.

If harvested timber changed hands for $136 per cubic meter, then annual net returns close to navigable waterways would be between $21.40 and $51.40 per hectare, depending on extraction expenses (Table 1). Even the lower pay-off is financially attractive in a region where real estate prices, which indicate the opportunity cost of land, are $300 per hectare or less. By contrast, annual net returns in less accessible sites, where mechanized extraction is required, amount to just $10 per hectare even if harvested timber is priced efficiently. This is an attractive pay-off only where land’s opportunity cost is negligible, as it happens to be in many parts of northwestern Ecuador where excessive rainfall, thick and erodible soils, and a lack of transportation infrastructure combine to make agriculture entirely infeasible.

It has to be acknowledged that comparing the average annual net returns of forestry with the opportunity cost of land can yield a misleading picture of timber production incentives. From a private logger’s perspective, the best option is often to high-grade a forest, paying little attention to the sort of site damage that slows timber regrowth, and then move to another stand of trees. For example, Boscolo and Vincent (2000) have found that, since the pace of regeneration compares quite poorly with real interest rates, higher stumpage values encourage the adoption of sustainable harvesting and management practices in peninsular Malaysia much less effectively than do environmental performance bonds. Certainly, a price run-up is bound to accelerate deforestation if it is viewed as temporary.

That said, it is difficult to conceive of sustainable practices ever being adopted if timber prices remain pegged at low levels, as they continue to be in Ecuador.

4. WHY ARE LOG PRICES TOO LOW?

When asked why they do not receive more money for their output, forest owners in northwestern Ecuador routinely respond that markets in places like Borbón are monopolized. Representatives of the wood products industry take exception, pointing out that there are countless timber buyers in various parts of the country who channel wood to a large number of small-and medium-sized firms making

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<tr>
<th>Table 1. Forestry’s net returns in northwestern Ecuador with current market values and with efficient prices</th>
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<td><strong>Nonmechanized logging</strong> (riparian settings only)</td>
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<td>Annual timber production (assuming 50% is wasted during and after harvest)</td>
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<td>Times price</td>
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<td>Annual revenues per hectare</td>
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<td>Less harvest and transport costs (per cubic meter harvested from each hectare)</td>
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<td>Annual net returns per hectare (not counting INEFAN fees)</td>
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*a Source: Surveys of loggers (small- and large-scale) and timber buyers, October and November 1997.*
furniture, doors and windows, and other goods. This is a valid point. But the persistence of highly negative NPRs for logs several years after major reductions in trade barriers makes it difficult to claim that timber markets are truly competitive. Furthermore, the plywood industry, which is a mainstay of the Ecuadorian wood products sector, consists of just two enterprises, one a relatively small business and the other an integrated conglomerate of several firms. Since a large share of industrial-grade timber is used for plywood production, the absence of a third, fourth, or fifth firm undoubtedly is a telling indicator of the sort of monopsonization that depresses the market value of raw materials.

A large gap between domestic and international prices ought to be a considerable inducement for other firms to get involved in Ecuadorian forestry, at least as buyers. That entry is not actually occurring obliges one to analyze why investment is being discouraged. By far, the severest impediment to investment has been Ecuador’s distortion-ridden macroeconomic environment, which brought the country to the brink of economic collapse in January 2000. But, three other reasons, all sector-specific, discourage potential entrants from putting money into the timber business.

(a) **Corruption induced by excessive regulation**

With the 1981 Forestry Law largely superseded by the Exportation Facilitation Law of 1989, the most important governmental intervention in the Ecuadorian forestry sector has to do with controls on the domestic circulation and utilization of timber. These controls, which are spelled out in INEFAN Resolution 16-rd, R.O./618 (dated 24 January 1995), are comprehensive, extending from the felling of trees through the processing of wood. Full management plans are obligatory for parcels larger than 100 hectares that are slated for timber extraction. But to avoid this requirement, most loggers operate on smaller lots. For these, simple work plans are all that are required. Once INEFAN approval has been granted, fees must be paid. Since the national currency has devalued by more than 95% since early 1995, these charges have fallen to nominal levels. In January 2000, when dollarization was declared at an exchange rate of 25,000 sucres to the dollar, $0.44 (11,000 sucres) was collected for each cubic meter of unprocessed tropical hardwood, $0.28 (7,000 sucres) per cubic meter of other timber, $0.88 (22,000 sucres) per cubic meter of sawn tropical hardwood, and $0.56 (14,000 sucres) per cubic meter of other sawn lumber. After the fee is paid, felling proceeds and a license to transport timber (guía de movilización) is issued.

As a rule, informal motosierristas and other small-scale loggers pay no attention to INEFAN controls. Neither do they pay fees. The situation is different for formal businesses operating at a larger scale. If they lack proper permits, their timber is confiscated and sold on the open market. The same is true of wood products manufactured from illegal timber. Any private party bringing a violation to the attention of the authorities receives half the sales proceeds as a reward, with INEFAN retaining the other half.

Tight controls on the circulation and utilization of timber could be incorporated in a “green certification” scheme for Ecuadorian forest products. But at present, the main impact of regulation is to open up multiple opportunities for bribery. An official seeking an illicit payment can seize on any one of a number of reasons: shipping more timber than what one’s guía de movilización allows, moving timber after a guía’s expiration date, as well as more serious violations. Loggers and intermediaries in the vicinity of Borbón, for example, complain that bribes are sometimes demanded even when there has been full compliance with all laws and regulations. Another problem arises when INEFAN employees or their associates present a complaint, thereby receiving half the fine. With INEFAN and its functionaries acting, in effect, as judge and jury, there is a tendency toward overregulation and excessive financial penalties.

Like fees paid to INEFAN and the expense associated with preparing logging or management plans and seeking the approval of same, illegal payments detract from stumpage values. Corruption take another toll, which probably has much more serious consequences for timber resource development in Ecuador. It is reasonable to suppose that existing firms possess the sort of knowledge and contacts needed to keep bribe expenses to a minimum. Lacking this advantage, potential entrants suffer more from corruption. Of course, this asymmetry acts as a brake on the sort of investment that is part and parcel of competitive timber markets.
Attenuated forest ownership

Another factor that discourages new investment is weak property rights in tree-covered land. There are some places in Ecuador where no private claims on natural resources exist and where public sector claims are not matched by tangible efforts on the government's part to control access. In these places, people take advantage of each and every opportunity to capture economic rents by mining ecosystems. This causes environmental values to be dissipated entirely.

Elsewhere, ownership of a sort is recognized, although it remains far from secure. In part, this results from the long delays and cumbersome procedures required for the adjudication of formal property rights. In a statistical analysis of the causes of deforestation in the Ecuadorian Amazon, Southgate, Sierra and Brown (1991) show that lack of formal tenure, related to sluggish adjudication, tends to accelerate agricultural land clearing, which serves to strengthen informal claims on natural resources.

That this sort of tenurial arrangement discourages forestry and other nonagricultural land uses is obvious. The problem is illustrated by an episode in August 1996, when there was an invasion of several hundred hectares in northwestern Ecuador owned by the country's leading wood products firm. With full governmental approval and encouragement, the firm has been applying various measures to limit environmental damages and to enhance future timber production at the site. It is safe to assume that the participants in the invasion felt that they could take advantage of the institutional flux that normally accompanies a change in the national government, of the sort taking place at the time. Incidents such as these, which are far from rare, demonstrate that the rule of law is not as strong as it should be in the Ecuadorian countryside (Southgate, 1998).

Anyone contemplating an investment in timber production is bound to be aware of the implicit risks. The invasion of August 1996 notwithstanding, the frequency of such events has trailed off since passage of the 1994 Agrarian Law, which strengthened property rights in rural areas. The same piece of legislation also granted comunas limited rights to buy and to sell real estate. This allows group-owned land to be used as loan collateral. In addition, the new law creates opportunities for comuna members to acquire individual tenure in their respective holdings.

Thousands of rural households in various parts of Ecuador have taken advantage of the latter policy change. Exceptional in this regard is the northwestern part of the country, where little if any privatization has occurred. It is entirely sensible to manage forests in large, unified parcels, as opposed to the 50-hectare plots traditionally awarded to the beneficiaries of land distribution initiatives. But, the Agrarian Law left intact old legislation having to do with the governance of comunas, which has hindered their participation in the market economy as well as their ability to develop natural resources efficiently.

The weak state of forest-owning comunas

Much of Ecuador's tree-covered land is under the informal control of indigenous groups or communities of African descendants. One difficulty facing these groups and communities is the lack of legalized land rights, without which participation in formal credit and real estate markets is, at best, marginal. But even if communal land rights have been adjudicated, serious problems arise because the 1937 Comunas Law requires that the local cabildos that govern group holdings hold office for just 12 months. The leadership turnover mandated by this requirement exposes forest dwellers to business practices that are unfair, uncompetitive, or both. Although specific documentation is hard to come by, accusations that community leaders have been bribed to accept logging agreements that stipulate low prices and weak environmental controls are common in northwestern Ecuador.

Another consequence of legislation that weakens local institutions is that forest-based communities find it very hard to develop and to implement long-term plans for renewable resource development. Likewise, it renders those groups and communities unattractive as partners for firms that otherwise might be willing to pursue joint sustainable forestry ventures. One foreign investor who tried, but failed, to organize such a joint venture reported in 1993 that the current cabildo in the area where he was working always seemed to be asking for money to pay for a fiesta here and a motorcycle there. He reasoned that the group taking over in a few months would make similar requests, as would the cabildo that would take office one year later, and so on. The
expenses that would be incurred during the several decades required for standing timber to mature are obvious (Salazar-Canelos et al., 1998).

Private investors' reluctance to do business with local communities comprises a very serious impediment to sustainable resource development in northwestern and eastern Ecuador. The former group possesses the managerial expertise and marketing contacts required to derive full value from the resources owned by the latter group. If joint ventures are not pursued, forest dwellers will continue to have no alternative to selling timber in monopsonized markets at inefficiently low prices.

5. CONCLUSIONS

The damage done when governments manipulate or suppress market forces has become abundantly clear in recent years. Understandably, this has reinforced the confidence of those advocating economic liberalization. It is unfortunate, though, that would-be liberalizers sometimes neglect that, to perform well, any market must be undergirded by a functional set of enabling institutions. Where there is no respect for the rule of law, generally, and contracts and property rights, specifically, the invisible hand of the competitive marketplace is unable to work its allocative wonders.

The folly of overlooking the institutional prerequisites for a robust and efficient market economy is prominently on display in Russia and neighboring lands. Less important in the grand scheme of things, the Ecuadorian forestry sector's disappointing response to freer trade also reveals the importance of institutional antecedents for capitalist development. Unless and until regulations that aggravate corruption more than they safeguard the natural environment are jettisoned, property rights in tree-covered land are made fully secure, and legislation that limits forest dwellers' participation in the market economy is changed, the investment needed for competition and sustainable resource development will not occur. Put another way, continued underinvestment in the institutional infrastructure of a modern, capitalist economy is bound to result in additional deterioration of environmental wealth.

As is the case in the former Soviet Union, the forces allied against institutional reform in the forests of northwestern Ecuador are powerful. Too many employees of INEFAN, which was absorbed by the Environment Ministry in late 1998, are willing and eager to seize on the countless opportunities for graft created by heavy regulation. There is little doubt that domestic wood products firms have concluded that the expense and bother of regulations and corruption are more than outweighed by the gains they enjoy because these burdens keep potential competitors at bay. Among comunas, the clamor for reform is perhaps not what it should be, insofar as some leaders benefit from the status quo. Even outside groups, including nongovernmental organizations (NGOs) hoping to promote sustainable forestry, do not seem to be going out of their way to press for reform.

As this paper's analysis of land prices and forestry's net returns suggests, the market forces that would be unleashed by institutional change will not necessarily guarantee the long-term conservation of tropical forests in Ecuador. Certainly, research carried out in Malaysia (Boscolo & Vincent, 2000) and other settings does not indicate that, alone, higher timber prices would guarantee sustainable resource development. The status quo in Ecuador has, however, become untenable. For good or ill, enforcement of the 1995 regulations on timber harvesting, transport, and utilization appears to have collapsed since INEFAN's absorption into the Environment Ministry and, more importantly, the onset of severe macroeconomic crisis of 1999. In order to protect itself from the long-term consequences of ecosystem mining, the country's leading wood products firm has established its own tree plantations (outside of natural forests).

The government appears to be interested in reform. Recognizing that the tree-covered habitats that remain in western Ecuador comprise one of the three most critical hotspots of threatened biodiversity that Myers (1988) has identified in various parts of the developing world, the Environment Ministry has proposed a thorough revamping of the institutions governing the forestry sector (Ministerio de Medio Ambiente, 1999). A clear thrust of the new strategy is to involve forest dwellers more directly in the sustainable development of the timber and other resources that surround them.

Maybe the grounds for optimism are stronger than the events of recent years lead one to believe. Perhaps forest exhaustion, which of
course would be detrimental for the national economy and tragic for local populations, can be avoided in northwestern Ecuador and other parts of the country.

REFERENCES


