COPING WITH ENVIRONMENTAL CONSTRAINTS ON EXPORTS

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ABSTRACT

This paper identifies the major environmental constraints that are currently being imposed in the highly developed countries (DCs) with potentially large effects on developing country (LDC) exports. It analyzes their effects on exporters in LDCs from the perspective of transaction costs and derives some testable hypotheses concerning the different strategies and paths which different types of LDC producers would be likely to take in different environmental conditions. It then tests for the validity of these hypotheses based on a case study of leather exports of Egypt. It also makes use of comparable information on India's leather exports and textile and other exports of other countries. The results suggest: (1) that legislated environmental regulations are less problematic for LDC producers than eco-labeling schemes; (2) that the most complete adjustments and accommodation to these regulations are attained when the producer-exporters are relatively large, have considerable experience in exporting and are highly dependent on the regulated markets for sales. Smaller firms are only likely to succeed in coping with these regulations if they have considerable help from governmental or non-governmental support agencies. Policy and other implications are derived.

Key Words: Environmental Regulations, Development, Exports, Eco-labeling

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I. INTRODUCTION

Developed countries (DCs) have been imposing an increasing number of environmental regulations of the sort that severely threaten the recently acquired market shares of less developed countries (LDCs) in DC markets. As such, these regulations add a new and important dimension to North-South tensions, in general, and to the growing importance of non-tariff barriers to trade, in particular. The environmental regulations arise in one of two ways: (1) via multilateral agreements to which LDCs are a party (e.g., the Montreal Protocol) or, more commonly (2), by autonomous actions by individual DCs, or groups thereof (like the EU or NAFTA). Among the latter are not only laws (such as the U.S. ban on aromatics in gasoline) but also voluntary arrangements like "eco-labeling" which, in its 1996 "Global Report" (UNIDO, 1996, 109-111), UNIDO identifies as the most severe threat to the future competitiveness of LDCs in world markets, with the potential to reverse the recent LDC gains in these markets.

While these fears are certainly plausible, to the best of our knowledge, the consequences, actual or potential, of such actions have not yet been demonstrated. A reason for this may be the widespread view among economists either that trade arrangements and environmental regulations should not be mixed (Bhagwati and Hudek, eds. 1996) or that international competition for industrial production and employment should force DCs to back away from their high environmental standards. Yet, the proliferation of ever-increasing environmental standards in DCs should make it clear that such regulations are unlikely to disappear (Garbo, 1997). Environmental issues have also been of increasing interest and concern in LDCs. Yet, in this case most of the attention has been concerned with tastes for environmental cleanliness and how these may be affected by income and social structure, and the effects (if any) of locally imposed regulations (if any) where information about these regulations is likely to be easily accessible.[1]

As a result, considerably more attention should be given to assessments of their effects and especially to how exporting countries (and especially LDCs) can best cope with the environmental regulations imposed in the importing countries. Two important gaps in the literature are thus evident: (1) the lack of an analytical framework for explaining the reaction of

[1] For example, in the special (February 1996) issue of this journal dealing with the issue of sustainability with respect to both macroeconomic and environmental constraints, only one of the papers makes any mention of the environmental constraints imposed in DCs affecting LDC exports and that one (Chisari, Fanelli and Frenkel, 1996),

exporters to these constraints and (2) the dearth of information on how LDC exporters in different countries have fared in trying to cope with these environmental constraints. The basic motivation for this paper is to begin the process of filling these two gaps.

The paper has four main objectives: (1) to provide an analytic framework based on transaction costs for explaining variations in the way different firms and countries try to cope with these environmental constraints even for the same manufactured good; (2) to present a detailed case study of Egypt's awareness, exposure and attempts to cope with such environmental constraints on the exports of a specific manufactured good (namely leather), (3) to check the validity of the derived hypotheses with reference to both the Egyptian case study and India for the same good, and (4) in the light of the findings with respect to (3), to make policy recommendations on what, if anything, LDCs could and should do in order to improve their abilities to cope with different types of environmental constraints.

Leather products are chosen as the industry for study because tanning, which lies at the core of the sector, is regarded as the most pollution-intensive industry outside of the chemical industry (an industry in which LDC exports are rather inconsequential). For example, with respect to perhaps the most serious type of pollution, i.e., toxic waste, the leather and products industry has a toxic waste pollution intensity of 15, 381 pounds per million dollars of output which exceeds that of all other three-digit ISIC codes except chemicals, and generally by a factor of three or more (Lucas, Wheeler and Hettige, 1992, Table 5.1). Not surprisingly, the leather goods industry was the first industry subjected to serious environmental constraints by Germany and other countries. Also, leather products is an industry in which LDCs have their largest share of the world manufacturing value added (36%), a share that has also been growing rapidly (UNIDO, 1993, Table II.1).

Egypt is chosen as the case study for three reasons. First, it is the largest producer of manufactured goods in the North Africa-Middle East region. Second, it is a large producer of leather goods. Third, since leather products are counted upon to be among Egypt's most important manufactured exports by 2005, current and foreseeable environmental constraints cannot be ignored. In testing the validity of the hypotheses developed in the paper, we also take advantage of evidence from India, already a large exporter of leather products with considerable

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although identifying the high costs of coping with such constraints (pp 236-239), provides neither details nor analysis

experience in dealing with environmental constraints. Given the large differences between India and Egypt in starting points, growth rates, industrial strategies, trade patterns and institutional and other environmental conditions, the Indian experience affords useful comparisons to the Egyptian case study and strengthens our ability to examine the effects of environmental conditions on the strategy chosen for coping with environmental constraints.

As to the countries whose environmental regulations are considered, the focus is on the EU because of its pioneering role in the imposition of such regulations.

Section II of the paper presents an overview of the environmental regulations faced by LDC exporters of manufactured leather goods. Section III presents the transaction cost analysis and hypotheses derived from it which attempt to explain the differences among firms and countries in reacting to, and coping with, the environmental regulations. Section IV presents the Egyptian case study. The Egyptian and other country experiences are then used in Section V to test the validity of the transaction cost-based hypotheses. Finally, Section VI presents conclusions and policy recommendations.

II. ENVIRONMENTAL REGULATIONS IN THE LEATHER INDUSTRY

The main objective of this section is to lay the foundation for the transaction cost analysis for coping with environmental constraints developed in section III below. As such, it has two main objectives: (1) to describe what LDC exporters actually have to face when they export to DC markets in general, and the EU in particular; and (2) to distinguish between the two major sources of environmental constraints identified above, namely, laws and voluntary arrangements (including eco-labeling schemes).

A. *Legislated Environmental Standards*

Legislated environmental standards ban or specify maximum permitted concentrations of specified compounds in the finished products. While there are some historical cases of such standards (mostly prompted by local catastrophe), none of these were directed at international trade or prohibited the use of certain polluting products (Cooper, 1993; Tietenberg, 1992). With globalization, however, in recent years it has become much more common to prohibit or sharply control the use of certain products, even products which were widely used and traded such as DDT, mercury, cadmium, atrazine, and hexachlorobenzene (HCB).

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of them.

A relatively recent example, and one of special relevance to the leather industry and trade in leather products, is restriction on the use of pentachlorophenol (PCP), a chemical used as a fungicide and bactericide. On the basis of numerous scientific reports on the health hazards of PCP, in 1987 the German government was first to ban its use. Yet, due to the opposition of other European countries, especially France and Italy, enforcement of the ban was delayed until 1990. Elsewhere and especially in LDCs, however, PCP remains in common use in many lines of production and its residues remain in products (especially leather) produced with it. Restrictions on PCP use, therefore, have more deleterious effects on LDC production and exports in leather than in any other sector. In Germany, the restriction means that leather products containing PCP residues in amounts exceeding the specified limits may not enter the country.

The restrictions on PCP use initiated in Germany have subsequently been adopted by several other European countries and the United States but in each case with differing ceilings allowable and other these regulations. For instance, while Germany allows only 5mg/kg of PCP in leather goods, the European Union standard is 10mg/kg. Enforcement of these regulations also varies considerably from country to country.

Warnings about health hazards arising from the use of azo dyes and other chemicals relevant to the leather industry were announced in the early 1990s by German authorities in order to signal subsequent regulations. On April 1, 1996 the German ban on azo dyes became official, prohibiting the delivery for distribution in Germany of any products in which such dyestuffs were used. An indicative list of 120 azo dyes used in the production of 20 strictly forbidden amines was specified. Yet, since not all such dyes on the list are strictly forbidden, an element of uncertainty has been created. In August 1996, the Netherlands imposed a similar ban but applied it to a much narrower list of products. The two countries also vary in the duration of the transitional period allowed for orders consummated before the dates at which the bans became effective. While the responsibility for complying with the new regulation lies with the importer in both countries, the agency doing the supervision differs by country.

Environmental legislation also extends to the packaging of imported leather goods since the packaging may also contain prohibited chemicals, or be subject to an entirely different set of regulations and agencies supervising the regulations.

B. *Environmental Eco-labeling Schemes and the Control of Advertising Claims*

Eco-labels are used to inform consumers that a product bearing the label is determined by a third party to be environmentally more friendly relative to other (non-eco-labeled) products in the same category. The use of eco-labels is voluntary. Yet, as consumer awareness of a product's environmental effects increases, an eco-label on a product can give that product an important advantage over its competitors lacking such a label. The purpose of eco-labels is to affect the behavior of not only consumers but also producers at home and abroad. Qualification for most eco-labeling schemes is on the basis of the environmental cleanliness of the whole life cycle of the product from raw material production, through fuel use to processing, packaging, distribution, consumption and even disposal. Each scheme specifies minimal conditions of qualification for the eco-label at each of these stages.

Since eco-labeling is rather common in leather, footwear, textiles and other products of special importance to LDC exporters, LDC exporters are becoming increasingly affected by these schemes. According to some preliminary estimates by UNCTAD (1994), 45% of EU imports in categories earmarked for eco-labeling originate in LDCs. This means that successful exporting to the EU and other DCs in the near future might well be conditional on compliance with such schemes. The difficulties that LDC producers face with these eco-labeling schemes include not only the costs of technical compliance with the regulations once knowledge of the regulations is obtained but also the rather non-trivial costs of obtaining that knowledge for the different markets and of changes therein over time.

Although a single country (the Netherlands) is designated as the coordinator of the eco-labeling schemes for footwear in the EU, by no means does this imply uniformity and clarity in these regulations throughout the EU. Indeed, despite efforts to be as precise as possible, there remain serious ambiguities in the requirements and in how they are to be assessed. Frequently, there is room for tradeoffs between the different individual components of such schemes, making them even more ambiguous (Cooper, 1993). The texts of such schemes often contain internal inconsistencies that confuse even domestic producers and merchants. Also there are important differences in process, substance and coverage among the different and rapidly proliferating eco-labeling schemes (with one or more schemes having been adopted in at least seventeen countries). At the 1993 Earth Summit, moreover, the governments of over 150 countries agreed "to expand environmental labeling ..... to assist consumers to make informed choices."

If environmental friendliness is deemed to be an important characteristic of a product in the marketplace, quite naturally firms will want to make claims in their advertising about such characteristics. Not surprisingly, consumer protection agencies of DCs, such as the Federal Trade Commission in the U.S., have taken it upon themselves to issue both guidelines about what can or cannot be claimed in such advertising, and operational definitions of terms such as "recyclable", "degradable", and "ozone-safe". Such guidelines benefit consumers by protecting them from deceptive labeling and producers by providing a uniform set of rules and reducing ambiguity. Yet, once again, LDC producers would seem to be at a distinct disadvantage in obtaining information about both the guidelines and their practical application.

III. TRANSACTION COSTS OF COPING WITH ENVIRONMENTAL CONSTRAINTS

The transaction costs to any exporter of penetrating international markets may be identified as the costs (i) of information about market conditions in any given foreign market (the quantities and qualities desired and the prices prevailing for each different quality), (ii) of information about government regulations and other policies in both foreign and home markets, (iii) to each potential party of identifying appropriate trading partners in these markets, (iv) of negotiating, writing and enforcing contracts, and resolving disputes between parties, and (v) of financing both the transactions (during the often lengthy period from placement of the export order until receipt of final payment) and the risk of default.[2] Because the markets and non-market institutions for obtaining the relevant information, contract enforcement and financing are much less developed in LDCs than in DCs, these costs are generally much higher in LDCs than in DCs, justifying our focus on LDCs.

The introduction of environmental standards and regulations on the part of DCs can add substantially to these transaction costs for an LDC exporter in several ways. For example, with eco-labeling, and the proliferation of such schemes both within and across countries, the numbers of relevant qualities, product prices, regulations to identify, track and cater to have increased sharply both in number and complexity. Once the knowledge about such matters is obtained, moreover, the transaction costs of attaining compliance, including those of providing the necessary documentation of such compliance, are likely to be very substantial indeed. The choice of trading partners may also be affected by such regulations, again adding not only to the

information costs but also to the negotiation and contracting costs. Finally, both the time lag between placing an export order and completing the transaction and the risks of default or declaration of non-compliance may be increased, thereby increasing the financing costs.

A. *Transaction (Sunk) Costs and the Phases of Response to Environmental Regulations*

An important difference between the costs of these environmental regulations and other regular forms of transaction costs is the larger extent to which they are likely to represent "sunk" costs to the firms. Sunk costs are those costs (especially investments in information) that cannot be fully recovered through transfer or sale once undertaken. The extent of the sunk costs depends on the difference in value between the original outlay less depreciation and its alternative use (salvage value, resale or transfer price). The larger that difference, the more sunk costs can distort a firm's optimal decision in a competitive environment. If the firm investing in such information could sell that information, it could recoup its investment and not have to bear sunk costs. Yet, since such information markets rarely exist, especially in LDCs, LDC firms typically have to bear the full transaction costs as sunk costs.

Because of the rapidity of change in international markets, i.e., changing demand patterns, different competitors, changes in marketing mechanisms, changes in prices, and the aforementioned differences in all these across countries, the gap between the value of such investments in one market and at one point in time and that in another is bound to be very substantial, implying large transaction costs. Roberts and Tybout (1997) have shown that, by staying out of an export market for more than two years, an exporting firm may be forced to lose all the investments it has made in market penetration.

We hypothesize that, because of the diversity, complexity and rapid change of these new environmental standards imposed by DCs, LDC exporters would typically go through several stages of adjustment. In the first stage, the firm may be confused, unsure about whether or not the announcements it has received of the regulations are correct, and, if so, whether or not they are enforced. It may choose not to add to the risk of sunk cost losses by shipping the products without more confidence that the products can still enter. Second, once the firm becomes certain that the environmental regulations are binding and permanent in the importing country imposing them, there is likely to be a second phase in which the firm tries to circumvent the environmental

[2] See Levy et al. (1999) and Abdel-Latif and Nugent (1996) for further elaboration of these various components of

constraints by diverting their exports to other markets devoid of these environmental restrictions. Since these markets may be less remunerative and involve new costs of information to access successfully, this adjustment only adds to the sunk transaction costs. Third, after finding themselves less successful than expected when restricting themselves to the unregulated markets, the firm is likely to enter a third phase in which it attempts to comply with the regulations in the country imposing the regulations, but once again adding to the transaction costs. In this latter case, there may be requirements of new machinery, high priced imported chemicals or chemicals.

One case in which these costs may be bearable may be when the markets are not very competitive, implying that the exporting firm may be able to recoup some of these transaction costs by obtaining higher prices on their sales in the regulated market. For the most part, however, LDCs operate in fairly competitive, price-sensitive segments of DC markets. In such cases, the exporting firms can recoup significant portions of these costs only when the markets are sufficiently safe and dependable that they can be recouped gradually over long periods of time, even if only a little at a time (i.e., because of small profit margins).

The transaction costs in each phase faced by the LDC exporter and the extent to which they are "sunk" depends on several factors: (1) product and market-specific considerations such as the complexity, availability of, and accessibility to, information relevant to each phase and the costs of making use of that information and the differences therein across markets; (2) the characteristics of the LDC exporting enterprise; and (3) the support offered to the exporter by the LDC governmental and/or non-governmental institutions.

(1) *The Complexity, Availability and Accessibility of Information*

The relevant information on environmental controls is new, complex, and in some respects qualitative. All these characteristics raise the costs of obtaining and understanding the relevant information. For example, their newness makes it that much more difficult to identify intermediaries from whom the information can be obtained at low cost. Since different countries have different standards and, even if they have the same standards, may enforce them differently, information acquired in one country may not be transferable to other countries. Indeed, since in the second phase of the coping process exporters will want to explore new unregulated markets, a new set of the old transaction costs arise. Finally, in the third phase, costs are likely to be even

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transaction costs.

higher than those associated with the previous two phases since they involve changes in the production process itself and the search for new, more environment-friendly chemicals, components and techniques. As mentioned above, the longer it takes the firms to move from one phase in the adjustment process to another, the larger will be the proportion of the transaction costs that are "sunk", implying that new investments in information must be made without the ability to redeem the old ones.

Generally speaking, the search becomes more problematic and more costly (a) the greater the differences that exist among the requirements of different countries and schemes, (b) the stricter are the regulations and (c) the more ambiguous and less transparent the regulations and their implementation. Moreover, because of the recent origin of many of these regulations and the limited amount of research that has been done on them, existing lists of prohibited chemicals and other regulations may be subject to sudden additions and frequent revisions as new research is conducted. Because of their greater complexity, cradle-to-grave character and multiplicity across countries and product groups, the information costs associated with coping with eco-labeling schemes are likely to be considerably higher than in the case of legislated environmental standards.

For instance, a mutually agreed upon export transaction could end up being banned from entry to a DC market, perhaps only because it did not meet a single ambiguous environmental standard particular to that market, or because it was delivered following the end of the pre-specified transitional period for phasing in the regulations. These problems add to the risks and raise the costs of financing the export transaction. For example, putting together an export agreement or contract becomes more complex as it has to account for possible changes in the environmental conditions. Implicitly, the environmental regulations introduce a third party to any export transaction whose dictates can dominate the desires of the parties directly involved in the transaction. While this could result from various other government policies in the foreign market, it is particularly relevant in the case of environmental regulations because of their complex and sometimes ambiguous character. While these costs are faced by exporters in LDCs and DCs alike, they are obviously higher in the former than the latter because of poorer access to information about both (1) the constraints and (2) alternative means of coping with these constraints, and hence the higher information and transaction costs in the LDCs. Generally

speaking, these costs should be inversely proportional to both the level of development and the degree of openness of the economy to the rest of the world.

(2) C*haracteristics of the exporting enterprise*

Given the importance of both economies of scale and externalities in information, large firms are likely to have lower unit costs of obtaining and processing such information and to internalize more of the benefits thereof than small firms. (The natural advantage of large firms in these aspects is likely to far outweigh any possible advantage of large firms in terms of production cost, where any possible economies of scale are often outweighed by the disadvantage of decreased flexibility.) For this reason, the smaller the enterprise, the higher would be the transaction costs per unit of actual or potential export. Moreover, unless the firm itself has personnel experienced in such matters, it may not know where to begin to search for the information or how to process it. Since small firms are less likely than large firms to have such personnel, they are more likely to be forced to use intermediaries in trying to find out about and later trying to cope with environmental constraints in DCs. Without access to relatively low-cost intermediaries, such as local governmental, non-governmental institutions, or commercial firms (to be discussed below), small and medium-sized enterprises (SMEs) may entirely give up on DC markets. Even if previously successful in penetrating these markets, until such time as the informational externalities of the exporting activities of large firms may leak out to them, SMEs may well have to settle for access to less demanding markets, thereby avoiding having to consider compliance with the constraints.

The bias against SMEs implicit in such environmental constraints becomes more serious when the chemicals banned by virtue of these constraints apply not to the final products under direct control of producing firms but rather to intermediate goods (such as tanned leather). To guarantee that their suppliers of raw materials and intermediate goods use the environmentally friendly chemicals and processes requested in DC markets, a whole new line of additional transaction costs is imposed on LDC exporters. These include the costs of the information about the practices of raw material and intermediate goods producers with which they may have neither experience nor control as well as the additional costs of negotiating, designing and drafting, monitoring and resolving disputes in, these more complex contracts. Naturally, in vertically integrated enterprises producing their own raw materials and intermediate goods, the costs should

be considerably lower. Since SMEs are less likely to be vertically integrated, this is still another reason for expecting the burden of the environmental constraints to be heavier for them. Moreover, the less educated and less acquainted the personnel involved are with advanced communication equipment, the more costly the whole process becomes, especially given the variable nature of, and rapidity of change in, the environmental information involved.

(3) *Support provided by local governmental and /or non-governmental institutions*

Several types and levels of assistance can be provided by local institutions or commercial intermediaries: One form of such support is promotion of general awareness among LDC producers of the existence of permanent environmental constraints on manufactured goods in the DC markets. Such efforts can reduce the time required to get through the first phase of the adjustment process, that of inaction due to uncertainty and ambiguity. They can also reduce the information investment costs that exporting firms make. Such efforts would be more important for the first generation of LDC exporters subject to the environmental constraints since subsequently greater awareness of these constraints would allow the exporters to skip the first phase altogether. Another important form of such support would be efforts to provide LDC exporters with timely and detailed information on the environmental standards and regulations of the different DC countries on products of present and/or potential interest for the country. The pace and regularity with which such information is provided could determine the level of information costs faced by the exporter. Due to the technical nature of some of this information, technicians may be needed to advise producers/exporters on how the environmental standards are to be accommodated. A third useful form of support would be advice on how best to meet the constraints, such as the most cost-effective environment-friendly substitutes for banned or sharply controlled chemicals and processes.

While some of this support could come from commercial intermediaries, these may not be present in a given LDC and may need to be cultivated by the government. Moreover, to the extent that such services needed are of a public good variety, their support or even provision by governmental or non-governmental organizations may be essential. Indeed, it would appear that environmental constraints abroad create an important role for local institutions if LDC exporters are to remain competitive in markets subject to environmental constraints.

Naturally, in practice, these three transaction cost-determining factors are likely to be interdependent and mutually re-enforcing. For example, the more complex the regulations and the less available governmental and non-governmental organizations capable of assisting firms in obtaining information on how best to cope with such regulations, the less likely it is that any LDC exporters, but especially SMEs, would be able to bear the transaction costs. Yet, inevitably, at least one of these factors is likely to apply at any time, making the transaction costs important in virtually all contexts, and very important in some. As noted in Section II, since the relative difficulties of the standards vary by country, commodity, and source, it is these variations which constitute the basis of the hypotheses proposed in the following section.

B. *Hypothesis Generation*

In view of the three different phases of adjustment that LDC exporters are hypothesized to go through in adjusting to internationally imposed environmental constraints, different firms could be expected to take one of the following reaction paths: (1) to go through in succession each of the three phases identified above; (2) to go through the first and second phases only, (3) to go through the first and third phases only, or finally (4) to remain indecisively in the first phase indefinitely. Among these alternative paths, path (3) is clearly the one that copes most successfully at minimum transaction costs, and (4) is the least successful. Path (1) implies success in coping, but with high transaction costs, and path (2) implies less success in coping, but also lower transaction costs.

We assume that, because of the importance of these transaction costs relative to the (given) production costs, each LDC exporter will choose the path that minimizes its total transaction costs, given its environmental conditions. The collective action of the majority of exporters will determine the extent to which the country as a whole is able to cope with the environmental constraints. From these assumptions and the above considerations, the following testable hypotheses can be derived:

H1. An LDC exporter is more likely to follow the desired path (3) (a) the more critical is the importance of the environmentally constrained market to the sales and profitability of the exporting firm, (b) the more assistance it receives from local institutions, and (c) the less ambiguous and more certainly permanent are the regulations. The first of these conditions makes

compliance more necessary and the latter two reduce the transaction costs sufficiently to allow the firm to comply without much delay.

H2. The exporter would follow the next best path, path (1), (a) the larger the available stocks of finished goods produced using forbidden chemicals or processes, and (b) the greater the importance of the environmentally constrained market to the firm's long-run profitability. Seeking substitute markets is important in such cases to reduce the losses of unsold goods.

H3. Path (2) is more likely to be followed (a) the less assistance that can be obtained from local institutions, (b) the less the importance of the environmentally constrained DC market to the firm, and (c) the greater the complexity of the environmental restrictions in DCs relative to the other less demanding markets.

H4. The least desirable path (4) will be more likely (a) the lower the availability of local institutions capable of informing LDC exporters of international constraints and of the alternatives available to them, (b) the greater the complexity of the regulations in the DC market relative to those in other markets and (c) the smaller, less vertically integrated and less experienced in exporting is the exporter. Exporters or potential exporters in such situations are unlikely to be able to cope because of the large size of the transaction costs involved given their lack of even the most basic information about the environmental requirements of these markets and of how to penetrate the alternative less demanding markets.

H5. In case of compliance, LDC exporters are generally more likely to cope with the legislated environmental standards than with the eco-labeling schemes because (as explained above) the transaction costs associated with the latter are likely to be larger than with the former.

IV. EGYPTIAN CASE STUDY

The purpose of this section is to describe the case study of Egypt’s leather industry. We begin with a description of the industry and its exports, then go on to the findings of a questionnaire directed to a sample of producers in the sector concerning their knowledge of the environmental regulations abroad affecting their exports and of the way the firms were coping with these regulations and concludes with an assessment of the role of governmental and non-governmental institutions in helping firms to cope.

A. Background

Egypt's leather industry is comprised of four main divisions: tanning, footwear, garments and other leather products (belts, bags etc.) Table 1 presents the general structure of the sector. The tanning industry consists of 350 tanneries, (299 licensed and 51 unlicensed). With the exception of a few medium-sized ones and two large public sector tanneries, most tanneries are small and informal. Despite their large size, the two public sector tanneries operate at much less than full capacity and in 1995 accounted for only 15% of total production. The tanning industry is concentrated in Cairo and employs a total of 20,000 workers, but a mere 10% of total employment in the leather sector.[3]

The footwear industry, with its 25,230 factories, provides 65% of total employment in the leather sector. While the vast majority of the factories are of the cottage and small-scale variety, there are 230 larger ones that use more sophisticated technology. Many of these larger factories are integrated with tanneries and account for the majority of the sector's exports. Unlike the tanneries, the footwear factories, especially the larger ones, are more dispersed into the country's new industrial cities.[4]

Leather garments and other leather products employ 50,000 workers (25% of the total) and account for 10% of the total value of production from the leather sector. Once again, with only a few exceptions, cottage and small-scale factories dominate. As with footwear, many of these establishments are located in the new industrial cities.

As seen in Table 1, the footwear industry is the largest contributor to exports (55% of the leather industry's total in 1992), followed by other leather goods (32.5%) and finally garments (12.5%). In the interest of import-substituting industrialization, exports of tanned leather were prohibited by law between 1981 and 1991. Although such exports were permitted again beginning in 1991, they remain insignificant. The traditional markets for Egyptian leather products are Arab countries, the former Soviet Union, Eastern Europe and more recently Western Europe. Although at this point, exports of leather products are small ($27 million in 1992), there is believed to be great potential for growth. Indeed, a recent USAID study expects such exports to reach $120 million by the year 2001, and even between 1988 and 1992 footwear exports had

[3] At present, serious efforts are being made to relocate the tanneries outside of Cairo so as to increase productivity and lessen pollution in Cairo itself.

[4] Over the last twenty years there has been a concerted effort to avoid excessive concentration of economic activity in Cairo by creating and providing modern infrastructure for a number of satellite cities, many of them located on desert land.

grown by 670%. Notably, this export takeoff coincided with the establishment of new, more modern factories and trade in components rather than finished products.

B. The Questionnaire

Since there was virtually no information available, a questionnaire was designed to collect the information on the responses of producers and exporters of leather products to the following questions concerning environmental regulations in DC markets:

(i) Are exporters aware of such constraints? If so, what is the extent of their level of awareness? How accessible is such information?

(ii) Do these constraints affect their export activities at the present time? If not, are they likely to do so in the future?

(iii) When faced with these environmental constraints, what do exporters do to remain competitive?

The questionnaire was distributed to a sample of producer-exporters from the Egyptian leather sector. The sample consisted of 49 enterprises: 33 tanneries, 11 footwear producers, and 5 producers of leather products/garments. Although the sample is not a random one, it was chosen to satisfy the following criteria: (1) to provide some representation of each of the three types of producers within the leather sector; (2) to over-represent tanneries since they are the firms most affected by international environmental constraints; (3) to represent firms of very different size and (4) to over-represent firms with experience in exports to Europe.

Table 2 describes the firms in the sample. Part a) of the table shows the breakdown of sample firms by size and product type. Most (over 80%) were classified as small, and all but two of the rest as medium in size (in terms of numbers of employees). Well over 60% of sample firms were in tanning and over 20% in footwear. Part b) shows that the proportion of sample firms exporting at the time of the survey was fairly substantial in each sub-sector, 19 of 33 in tanning, 6 of 11 in footwear, and 2 of 5 in leather products. Part c) of the table shows how the relative importance of exports in total sales varies by size of firm and sub-sector. While 17 of the 39 small firms in the sample exported, none exported 50% or more of their total sales. On the other hand, all eight of the medium-sized firms in the sample exported at least 20% of their total sales and both large firms exported at least 50% of their sales. Note also that the percentage of sample firms exporting at least 20% of their total sales is higher for footwear (55%) and leather

products/garments (40%) than for tanneries (only 9%). Only 15% of the firms that export at all, export over half of their total sales.

C. Awareness of Environmental Regulations Abroad

Two kinds of awareness of international environmental constraints were investigated: (1) general awareness and (2) detailed technical awareness. Also investigated were the perceived relevance of environmental pressure, access to information about international environmental regulations, and in particular the role of local institutions in such access. The results obtained from exporting firms in the sample are summarized in Table 3. A majority of exporters reported general awareness but only 26% reported detailed technical awareness. Such awareness is positively correlated to the relative importance of exports in total sales and the degree of vertical integration (highest in the large footwear producers). No such awareness was reported by those firms producing exclusively for the domestic market. General awareness among exporters, moreover, was found to be higher in the case of footwear and leather product producers (91% and 80%, respectively) than in the case of tanneries (61%). This difference is not surprising given that (as mentioned above) the first group of producers is in direct contact with foreign buyers while the tanneries, for whom direct exports is relatively unimportant, deal with foreign buyers primarily only indirectly through producers of final goods.

The low level of detailed technical awareness among sample firms is reflected in the fact that not a single firm in the sample reported awareness or understanding of "eco-labeling" or of "ISO 14000" (the draft set of international standards of the International Standards Organization). Although a majority of producer-exporters were found to be aware of the "ISO 9000 certificate", none of the respondents actually had one. Likewise, although most knew of the ban on (PCP), only those firms exporting at least 50% of their sales knew of the ban on azo dyes. None of the others could even identify the prohibited chemicals, knowing only that some chemicals are prohibited due to their alleged hazards to health.

As to the question about access to information about the preferences of foreign consumers for environmentally friendly products, only 35% of the sample responded positively. The primary source of such information was said to be foreign buyers and obtained only at the time of export transactions. The lack of timely access to information about the preferences of foreign consumers

puts Egyptian exporters at a disadvantage because timely access to such information can be very important.(See also Morawetz , 1980).

The problem of access to relevant information becomes even more evident when it is noted that only 20% of the interviewed producers/exporters declared having access to sufficiently up-to-date information about environment-related legislation and requirements. The channels identified by this small minority of firms in the sample with such information for obtaining that information were personal contacts, participation in international fairs and access to specialized international publications. Clearly, these are all sources that reflect special initiative by the firms, and hence would not be of use to other, more passive exporters. As a result, other firms would be able to access detailed information on such regulations and on how to deal with them only at very high, perhaps prohibitively high, transaction costs. A final piece of evidence of lack of access to such information is that none of the producers interviewed responded positively to having been informed of substitutes for the environmentally forbidden chemicals or production processes.

D. The Role of Governmental and Non-governmental Institutions

This extremely problematic access to such information calls for an assessment of the relevant governmental and non-governmental institutions. Less than 20% of the sample firms perceived of local institutions as playing a positive role in assisting firms in obtaining access to information on international environmental regulations. The institution most directly related to the environment is the Egyptian Environmental Affairs Agency (EEAA). Its primary concern, however, is improving local environmental conditions, not with meeting international environmental constraints even when such concerns overlap. The second most relevant governmental institution is the Egyptian Export Promotion Centre (EEPC) whose job it is to provide supportive services to exporters in different sectors. In the case of the leather sector, the EEPC has been disseminating information on international environmental constraints as they become available to it from other governmental institutions such as the Ministry of Foreign Affairs and the Ministry of Supply and Trade. Unfortunately, the dissemination of such information has been slow and purely descriptive of the present or past without any forward-looking extrapolations or analyses. No more than 16% of the interviewees from the sector declared receiving useful information from these governmental institutions.

The most important non-governmental institutions related to the leather sector are the Tanning and Leather Product Chambers within the Federation of Egyptian Industries. These are concerned with the leather industry as a whole, not simply with exporting. The information distributed by the Chambers, however, is typically that received from the EEPC and is already out-dated by the time it reaches its members. Moreover, given their shortage of specialized staff and facilities and preoccupation with the problems of the industry not related to exports, the Chambers are not equipped to provide useful and detailed analyses of the information on international environmental constraints despite their genuine and serious efforts to do so. Given the relative underdevelopment to date of Egypt's exports of leather and leather products, especially to Europe, no leather exporters association has yet been established.

E. Conclusions and Successful Coping Mechanisms

To conclude, the burden of accessing information on international environmental constraints falls on individual exporters with precious little help from local institutions. This puts the Egyptian exporter at a disadvantage when compared to exporters from other countries, such as India (to be discussed below) and East Asia. In these countries, such information is better organized and available on a more timely basis, thereby lowering the transaction costs of entry into international markets subject to environmental regulations.

Have Egyptian producers been under pressure to conform with international environmental constraints? If so, in what way and by whom? To what extent do these constraints affect the present levels of exports? Only 27% of sample producers declared that they have been subject to pressures for compliance with international environmental constraints. The pressures that have been felt have almost exclusively arisen from European Union countries, in general, and from Germany, in particular.

These pressures, however, seem not yet to have had a significant impact on Egyptian leather exports in the sense of either reducing exports or generating serious complaints on the part of exporters to the responsible authorities. This conclusion is based on the following observations based on the responses of sample firms.

1) Since no more than 8% of the sample export more than 50% of their sales, most firms perceive the local market to be easier to access and more profitable than exports which are

subject to high transaction costs. This limits the relevance of international environmental constraints to a small minority of the most intensive exporters.

2) Since most of the export transactions with EU countries are in the form of one-shot, scattered transactions of relatively small size, for only very few firms have the environmental constraints imposed in DCs yet constituted a serious threat to the LDC firm's profitability and survival.
3) Not even for the firms which actually export to the EU and report being subject to pressure from Germany is Germany ranked as the most important customer. This means that companies are more geared towards "easier" markets within Europe, like Italy, which abide with environmental constraints much less strictly than Germany.
4) Finally, those companies reporting exports in the past but not in the last three years did not identify international environmental constraints as a reason for not exporting.

The above argument is further supported by two facts: (1) Arab countries rather than European ones are still the major export market for Egyptian leather goods. (2) The quality of Egyptian leather products is generally too low to be in demand in Western Europe and the U.S..

The fact that international environmental constraints have not yet had a significant impact on Egyptian exporters of leather products by no means implies that such constraints will be of little relevance to Egypt in the longer run. First, the recent establishment of larger sized plants with more modern technology capable of producing goods of a quality that could be competitive in EU markets implies that EU markets have great potential for Egyptian producers. Second, the soon-to-be-accomplished relocation of tanneries outside of Cairo will make compliance with international environmental constraints easier and less costly, thereby raising the export potential of Egyptian leather products ranging from tanned leather to finished products. Third, some exporters of leather products are already engaged in large scale, long term exports to European countries, having virtually skipped Phase 1. Learning how best to cope with environmental requirements in a cost-effective manner will be of great importance to both present and future producers of Egyptian leather products.

Egyptian producers of leather products and especially footwear have adopted two basic strategies for coping with these regulations that from our field visits appear to be satisfactory.

1) Formal and informal vertical integration with tanneries to assure that their tanned leather inputs satisfy environmental regulations without increasing costs exorbitantly.(Otherwise, compliance with these regulations on inputs, production processes and packaging would be expected to increase unit costs by a minimum of 15% and probably quite a bit more).
2) Those Egyptian producers of footwear and leather products exporting in large quantities and producing almost exclusively for exports (two medium sized footwear producers in our sample) have close relations with foreign trading companies in their target markets. These foreign trading companies inform Egyptian producers in a timely and precise manner of the changes in fashions, consumer tastes and environmental legislation relevant to their markets.

V. TESTING THE TRANSACTION COST-BASED HYPOTHESES

In this section the actual reactions to, and methods of coping with, environmental constraints on leather goods in Egypt and India and on other products in these and other countries are observed for purposes of testing the applicability of the analysis, and the validity of the hypotheses derived, in section III. For the case of India, we present a brief overview of the structure of its leather industry, present export performance, and its experience in coping with environmental regulations abroad, akin to that given for Egypt in the previous section.

A. *The Case of Egypt*

From the findings for Egypt in the previous section, it is clear that many Egyptian leather product producers have not even begun with Phase 1 of the adjustment process to environmental regulations abroad. The majority of those few producer-exporters which have been reacting have been following paths (2) or (4), neither of which yields compliance with the environmental constraints and competitiveness of DC markets. Since it is the high transaction costs of gaining access to such information and the lack of support from local institutions that lies behind these response failures, hypotheses (H3) and (H4) of Section II are supported.

Consistent with H1, and as shown in Table 3 above, awareness of environmental regulations abroad is positively correlated to the relative importance of exports in total sales. Consistent with H4, it is also positively related to the degree of vertical integration (highest in the large footwear producers).

The serious and seemingly successful attempts to cope with the environmental standards by large exporters support (H4) which states that large, vertically integrated enterprises are more

likely than SMEs to reach the stage of compliance with the environmental standards. The results also support (H1) that states that the greater the benefits and importance of environmentally regulated DC markets to the firm, the more likely it becomes that firms can cope with the regulations. In that special case, the support of the local institutions is weak but the large size of the exporting enterprise makes access to information easier and transaction costs lower, thereby compensating for the missing role of the government. The fact that not a single Egyptian firm in the sample understood eco-labeling makes it clear that, except for their voluntary character, this form of regulation is potentially more problematic for LDC firms than legislated regulations, thus supporting H5.

B. *The Case of India*

The Indian leather industry has a heterogeneous structure. It consists of tanneries as well as firms producing footwear and other leather products. Its 2000 tanneries employ about 1.4 million people. 75% of these tanneries are in the small-scale and cottage sector and the smallest 10% are not even registered with a government agency (Central Pollution Control Board, 1995). Also in the case of footwear (by far the most important leather product) two-thirds of the sector's value added is produced by small-scale and cottage factories. Yet, it is the better-organized and equipped medium and large-scale factories that account for most of the sector's exports.

About 20% of India's leather exports are destined for Germany, making that country its largest single export market. The Council for Leather Exports, the government-aided body for the promotion of Indian leather good exports, attempts to further increase the country’s exports to Germany and other DCs including the U.S.. A special Indo-German Project, moreover, attempts to provide India with up-to-date information on German regulations and technical expertise.

As to the means of coping with environmental constraints, a detailed study of the issue by the Central Pollution Control Board (1995) reveals the following. Compared to the cottage and small-scale factories which can't cope with the new requirements, the organized medium and large-scale units have little difficulty in doing so. Their long-established relations with DC markets, modern technologies, and financial sources, and the support received from local institutions all helped. These observations support (H4) which traces the response differences between small and large producers to differences in their comparative transaction costs and also (H1) which states that compliance is more likely the more important the particular DC market (in

India's case Germany) in total sales, and the greater is the assistance received by local institutions.

The Ministry of Commerce, the Council for Leather Exports and the Central Leather Research Institute all provide considerable assistance to producers. Among the forms of help reported are: (1) tariff reductions on those imported chemicals which substitute for the newly banned PCP (UNIDO, 1996, p.104), (2) research aimed at finding local substitutes for PCP, (3) the encouragement of public and private laboratories for testing the chemical content of leather, (4) technical support to reduce ambiguities in some of the specifications of inputs, and (5) early warnings on future bans (through the aforementioned Indo-German Export Promotion Project).

The same report indicates that, although information about the PCP ban had spread early, many Indian tanners and manufacturers did not take it seriously since (1) they were not convinced that PCP is hazardous to health and (2) other export markets allowed its use. Moreover, many leather exporters had substantial stocks of already produced PCP-containing leather and leather products. As a result, they had to find alternative markets for these goods or sell them in the domestic market at lower prices. These observations not only support our claim that phase one consisting "of ambiguity and confusion" exists but also that this phase is likely to be more important the larger are the differences in environmental constraints among different DCs. They also support (H2) concerning the pressures caused by the existence of stocks of old sub-standard goods to search for other, non-environmentally constrained markets.

Leather good manufacturers not having their own tanneries were shown to find it difficult to control the use of PCP by their tanners (in some cases located as far away as New Zealand). They have either to demand a certificate (not easily provided) from the tanners that PCP had not been used or to get the leather checked (and sometimes re-checked for safety sake) by an appropriate laboratory. Manufacturers with integrated tanneries, on the other hand, could, themselves, implement the use of substitute chemicals and certify the absence of PCP. This supports the portion of (H4) suggesting that transaction costs would be lower for vertically integrated firms. Some tanners send their purchased chemicals, even those obtained from Germany, to labs if they suspect them to contain PCP. These observations clearly reflect the high transaction costs associated with international environmental constraints, thereby supporting the analysis in section III above.

Finally, while many Indian leather manufacturers were willing to comply with the PCP ban, none was willing to comply with voluntary eco-labeling schemes because of their greater complexity and variation from one country to another. This supports (H5). According to a study by UNCTAD (1994), for a small Indian footwear to display the EU eco-label, the cost of the test requirements alone could amount to an increase of 50% of the factory gate price of the product.

The research findings also support the suggestion that Phase 1 (characterized by uncertainty, ambiguity and inaction) can be an excessively long and important phase which could discourage exporters from ever approaching such markets (as has been the case for most Egyptian exporters of leather products). This is more likely to be the case when there are (1) inconsistencies in the regulations and their implementations across countries or over time, (2) greater complexities in them such as when they are embedded in eco-labeling schemes, and (3) no local institutions capable of providing timely and accurate information about either the regulations or cost-effective means of satisfying them.

C. Evidence from Other Countries and Products

While all of the above is confined to the case of leather and the experience of Egypt and to a lesser extent India, there are many other products exported by LDCs subject to environmental regulations and eco-labeling schemes imposed in DCs. Textiles and clothing are two other especially important sectors. Vossenaar and Mollerus (1996) report the results from surveys of LDC exporters in Brazil and India of EU regulations (especially eco-labeling) on T-shirts and bed linen. Some 80% of EU imports of these products originate in LDCs. These regulations were especially onerous because they applied to the whole life cycle of production, including the production of raw materials in environments very different from those of Western Europe. The experience from both surveyed countries shows that it is primarily large exporting firms very substantially dependent on exports to EU which obtain the information and make the necessary adjustments. For most small producers or other producers the costs of obtaining the relevant information and adjusting their production processes to meet the requirements are too high to make this practical. A somewhat similar study has also been conducted of Colombian exporters of textiles and clothing, with very similar findings.[5] As a result, it would appear that

[5] See Gaviria with Barrera and Sanchez (1996).

virtually all these studies for each of the different products studied support all four hypotheses (H1- H4) developed in Section III above.

VI. IMPLICATONS FOR POLICY

The results of the Egyptian case study and our review of existing studies of India, Brazil, Colombia and other countries lead rather clearly to the following conclusions:

First, the environmental regulations of industrial countries can impose very substantial costs on developing country producers. These costs include those of information concerning the regulations, understanding the regulations and their implementation in practice, and of the likely changes therein over time in addition to those of complying with the regulations.

Second, despite these costs, LDC exporters are successful in adjusting to these regulations. They are especially likely to be successful when the exporters involved are large and heavily dependent on exports to the country imposing the regulations. These firms have the greatest incentive to invest in the necessary information, the strongest ability to understand such information and the ability to solve the technical problems either internally, through joint ventures with foreign firms or purchasing the relevant inputs or technology.

Small firms who export only in small amounts or occasionally to the regulation-affected markets are least likely to be successful in such adjustments. They are least likely to be aware of the relevant information, least likely to invest in such information (because the benefits thereof would leak out to other firms in the form of externalities) and the relative costs of making the necessary adjustments are likely to be prohibitively high. As a result, the costs of adjusting outweigh the benefits of such adjustments in additional exports. The typical reaction of small LDC exporters to these foreign-imposed regulations is to focus on more traditional markets where either consumers are less discerning or product price differentials far outweigh product quality differentials. Small firms tend to be successful only if two conditions are met: (1) the information costs are reduced through the assistance of governmental or non-governmental organizations and (2) the products are in niche markets so that the higher price that the exporters may be able to earn in the regulated markets through regulation-compliance may more than offset the costs of compliance.

The above findings point to the following policy choice tradeoff. LDC exporters may be relatively successful without a great deal of government or NGO assistance if exports are highly

concentrated in one or a few large firms with freedom of choice of appropriate relationships with foreign firms. Alternatively, small firms may be successful in penetrating international markets but for this to occur, such firms are likely to require considerable assistance from government or NGOs in obtaining the information, explaining the coping options and helping firms to make those adjustments at costs that do not exceed the benefits of penetrating such markets. The Egyptian, Brazilian, Colombian and other experiences seem to point to the success of the first approach while that of India points to the possibility that the small firm approach can also be successful.

Satisfactory cost-benefit studies of the latter type of intervention on behalf of small exporters – in India or elsewhere - have not been done. Nevertheless, a recent study by Levy et al. (1999), although not focused on environmental regulations, shows a variety of ways in which the cost-effectiveness of such interventions on behalf of small exporters can be increased. Such interventions in favor of LDCs can be justified by the existing subsidies to domestic industries in DCs by their governments (Fredriksson, 1997). If government agencies are not the most efficient producers of such knowledge, their role might appropriately be limited to merely improving the access for small or new firms to the needed services which would be provided by private suppliers, possibly large exporters themselves.

Suppose that a particular exporting country starts with only small, traditional enterprises in the export industry. Assume further that no cost effective program of governmental or NGO support to small producers can be found that would permit small firms to meet the requirements of DC environmental regulations. What then should be done? One strategy would be to permit mergers of the small firms and joint ventures with foreign firms so that the disadvantages of small size in dealing with these and other transaction costs could be overcome. In this way, these larger firms should be able to obtain the necessary information and technology and reasonable costs per unit of production.

Since the costs of such regulations are often biased against LDCs by virtue of their different conditions, and by the lack of LDC participation in the design or implementation of such regulations, international agencies and cooperative activities between DCs and LDCs could go a long way toward reducing the costs of adjustment. For example, DC governments and eco-labelling institutions might be encouraged (1) to consider comments from LDCs in drafting and

implementing their regulations, (2) to provide one or two years of advanced warning about regulatory changes, and (3) to move quickly to resolve uncertainties and ambiguities about the regulations and their enforcement and to make them both as transparent as possible, and (4) to compensate adversely affected LDCs by fstering tehnical assistance to them in helping them cope.

Given that differences in environmental regulations across countries can lead to greater uncertainty on the part of producers in LDCs and elsewhere as to the permanency or future direction of such regulations, and that, like differences in tariff rates across countries, such differences can increase the welfare costs of distortions, efforts should be made, perhaps within the World Trade Organization (WTO), to harmonize such regulations across countries. The case studies confirm the importance of the knowledge barriers for LDC producers arising from the environmental regulations imposed in different DCs. In the absence of either widespread FDI-based transfer of technology from DC firms to LDC firms or local institutions capable of assisting SME producers to learn about, and adapt to, international environmental regulations, it seems rather clear that the environmental regulations of the type being adopted in the EU and other DCs may have the effect of protecting DC producers from LDC competitors.

Naturally, when it is clearly demonstrated to informed experts from both DCs and LDCs that techniques currently used in production for either exports or non-exports impose negative externalities on the health and welfare of those involved in their production or consumption, LDC governments, themselves, should consider imposing such regulations on their own producers. Another benefit of doing so is that they would lower the transaction costs of potential exporters in coping with such regulations in DCs.

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