

PNAA-062

Northern Ecuador's Sweater Industry:
Rural Women's Contribution
to Economic Development

by

Peter Michael Gladhart*
Emily Winter Gladhart**

June 1981

Working Paper #81/01

Abstract: In 1955 the authors initiated handknit sweater production among 40 women in Mira, a village in northern Ecuador. The Mireñas have developed a cottage industry with 1,000 families producing 5,000 sweaters monthly in 1979. The industry has spread over two provinces as Mirenas extended employment and credit to even more isolated rural women. Women in Mira are economic actors in their own right who make important contributions to local and national development. Entirely dominated by rural women, Mira's sweater industry is an example of autonomous community development based on the elaboration of extended family exchange networks. It is argued that the nature and organization of the industry together with the high levels of earnings make it an example of "non-oppressive" development by rural women.

*Assistant Professor, Department of Family and Child Ecology, Michigan State University, East Lansing, Michigan, 48824

**Consultant, Women in International Development, East Lansing, Michigan, 48823

Partial support for the Working Paper series provided by the Ford Foundation and a Title XII University Strengthening Grant

The Michigan State University
Office of Women in International Development
Announces
A WORKING PAPER SERIES
On
WOMEN IN INTERNATIONAL DEVELOPMENT

The Office of Women in International Development at Michigan State University announces a series of Working Papers beginning in 1981. A major interest of the Working Paper Series is the encouragement of review and comment by colleagues who receive copies of the published manuscripts. Thus, an international community of persons interested in the topic area of individual papers will emerge. Such communications will contribute to the advancement of knowledge supportive of the role and status of women and their families in societies around the world.

Manuscripts are solicited from interested individuals in universities, government and private institutions who are concerned with development issues affecting women in relation to social, political and economic change. Areas of focus include population, health, education and women's economic activities, formal and informal.

The Working Papers Series will publish manuscripts illuminating the processes of change in the broadest sense and concerning an array of societies adapting to changing global conditions. Manuscripts may concentrate on empirical studies, theoretical concerns, or methodological issues. Topics of interest include women's historical and changing participation in political and religious spheres, traditional roles within the family, gender identity, relations between the sexes, and alterations in the sexual divisions of labor. Manuscripts are encouraged that deal with the complexities inherent in development and with people in situations of transition.

Review of Manuscripts

Review will be prompt and publication will quickly follow the acceptance of a manuscript by the WID Editorial Board. Authors will receive free copies to aid dissemination of information and solicitation of colleagues' comments. Authors maintain copyrights to their papers and are encouraged to submit them to the journal of their choice.

Manuscripts submitted should be single-spaced and include the following: (1) title page bearing the name, address and institutional affiliation of the author; (2) a one-paragraph abstract; (3) text; (4) footnotes; (5) references cited; and (6) tables and figures. The format of the article may follow any journal of the author's choice. Submit manuscripts to Rita Gallin, Ph.D., Editor, WID Publications Series, Office of WID, 202 International Center, Michigan State University, East Lansing, Michigan 48824, U.S.A.

To Order Publications

Publications are available at a nominal cost. We encourage respondents in developing nations to exchange publications rather than pay fees. To order publications or receive the Working Papers Listing, write to the Office of WID, 202 International Center, Michigan State University, East Lansing, Michigan 48824, U.S.A.

11

Northern Ecuador's Sweater Industry:
Rural Women's Contribution to Economic Development¹

I. Introduction

The contribution of the rural sector in Latin America to national development is undervalued in the development literature. Furthermore, the productive activities of women, particularly rural women, are often not even considered economic in character since they are perceived to be confined within the household. This paper is a report on a group of women in a changing society in Ecuador whose traditional participation in a variety of resource producing strategies contradicts these assumptions.

In Mira women and men earn income separately and while sharing the responsibility for maintaining households, most of the power to decide about the spending of income resides with its earner. This power is transferred from one generation to another through separate inheritance which is practiced by both male and female sides of the family. Mira women raise dairy cattle, hogs, sheep and small animals and dominate these activities among small farmers in the village. Many women also own food and clothing stores. In 1965 they began producing handknit sweaters in addition to a variety of traditional artisan products, many of which have now been replaced by commercial products or are becoming obsolete.

Much of this produce is for the urban market. Wandering butchers buy animals, cheese buyers go from house to house buying cheeses to sell to urban storekeepers or again from house to house, seamstresses do piecework for small urban shops, weavers used to weave burlap bags on commission for traders. Many items are produced for the local market. Those men who still have horses need saddles, blankets and bridles for them; local weavers process and spin local wool for blankets and ponchos for the hacienda owners as well as villagers but these artifacts are becoming less common. The sweaters are for the national tourist market and for export. The earnings from their production are spent by women on family food, the education of children and on investment in homes and land. Men also contribute to these basic needs, but frequently their income, dependent upon agricultural harvests, is a less regular source of cash so that daily requirements and educational expenses are largely the responsibility of village women.

Since 1966, Mira women have developed a sweater industry that involved 350 women in 230 of the village's 500 households in 1979. Half of these women knit piecework for other women, the others knit

as independent artisans. Of the latter, 50 had developed knitting businesses employing one to more than 30 knitters (frequently inhabitants of more isolated rural communities) while maintaining the traditional separateness of men's and women's enterprises. The scale of the industry is such that the authors estimate that more than 1000 families in two provinces are involved in the production of 6000 sweaters a month with about 50 to 75 percent exported to several continents.² The impact of the industry on the economic development of the region is notable, and women are credited with the success.

The focus of this paper is upon the social reality in Mira: that women are important economic actors in their own right, have maintained that importance as the society of which they are a part changes, and are actively encouraging their daughters as well as their sons to gain new skills which are economically viable. While there are several lessons to be learned about how transferred strategies encourage rural development, the focus is to clearly describe first the economic strategies of rural women and second how the production networks of knitters compare to other alternative employment strategies of women in Mira: agricultural production, the raising of animals, commercial retailing and primary and secondary school teaching.

All women in the village seek to ensure themselves access to their own economic resources, the distribution of which they control. Knitting is the most recently introduced employment alternative and it was introduced by outsiders to the village. The networks which evolved did not follow the traditional artisan networks which were structured around the products and services essential to a hacienda culture: processing locally produced wool into blankets and ponchos, ox and horse hides into saddles or bridles and coarse fibers into bags for produce. Artisans were subsistence workers totally excluded from the modern market. The patterns of exchange and the values of the goods they produced were established by custom. In fact sweater knitting was introduced after a process of purchase and subdivision of local haciendas was well underway: local people were becoming landowners of between two and ten hectares which integrated them directly into the cash market.

Because sweater knitting was introduced by Peace Corps Volunteers not fully aware of the social structure in the village, they did not clearly understand that female artisan production, in particular, was done primarily by those women who had no other employment options. While the skills needed to knit were learned formally in school as well as informally in the home, knitting was done only for home consumption by contrast to weaving, sewing and crocheting. Instead the Volunteers observed that sweater production could be controlled locally if the necessary marketing and quality control skills were learned. They therefore opted to begin the new income generating activity among people who were most able to perceive the importance of the business requirements of the activity.

As a consequence, the economic strategies here described

indicate that the new employment alternatives related to sweater production have tended to redefine and greatly broaden the categories of women likely to be involved in artisan production. The principal reason for this is that from the very beginning the economic returns to the new enterprise have been much higher than traditionally accorded artisan work of most men and women.

II. Methodology

The authors initiated the project described here in 1965 as Peace Corp Volunteer change agents. Information about the period 1965 to 1966 is principally derived from an unpublished monograph prepared in 1967.³ The authors resided in Mira between January 1979 and March 1980. Oral histories collected during this field research, records of the knitting cooperative for the period 1967-1972 and published newspaper accounts are the sources of information for events between 1966 and 1979.

During the field study a regular program of participant observation was maintained in the village and in the homes of representative types of producers. These observations and informant comments were written up in field notes and coded according to analytical categories. Sweater producers were accompanied on trips to purchase wool in other communities and observed in their homes when foreign sweater buyers came to the village. Sweater dealers, Otavalan Indian textile dealers who included sweaters in their wares, were visited in their homes and in the Otavalo and Quito markets.

The authors conducted a census of family composition, schooling and employment in the village of Mira in February and March 1979 and found 500 households with 2,275 persons. Utilizing the 234 knitting households from the census as a base, the village population working in the industry in some capacity was stratified by number of knitters in the family and production per week. A weighted sample of 67 knitter families with 133 knitters and 12 entrepreneur families was chosen for subsequent detailed production interviews conducted by the authors in June and July. The interviewers sought information on recruitment into the industry, reasons for choosing mode of production by various family members, weekly production rates, costs and earnings as well as information on other economic activities of men, women and children.

Many of the interviews were more than one hour in length. The interviewers offered to take a color snapshot of each respondent or their family. This offer was made after the interview was completed. The gesture seemed to be interpreted as our way of participating in the reciprocal exchange culture of the village, sharing a resource we were uniquely able to provide in exchange for a resource that only the knitters could provide. Regular visits to knitters and entrepreneurs of different scales of production were maintained throughout the balance of the year. Village leaders and officials

were regularly consulted and interviewed. Upon request, summary information from the population and employment census was prepared for the village commission seeking a change in its political status from township to county.

Entree is critical to this type of study. The authors were especially fortunate in that their prior association with Mira gave them special access to the people. Because of our responsibility for initiating the sweater industry, the Mireños felt and expressed an obligation to cooperate with the research effort and facilitate it. The willingness of the authors to bring their children to live in the village and be educated by the villagers was also viewed as an expression of trust that community members felt responsible to reciprocate.

III. Structure of the Knitting Industry in 1979

The production of handknit sweaters in northern Ecuador has three distinct phases involving distinct groups of people: the raising of sheep by the indigenous people of the central highlands, the spinning of wool near Otavalo by indigenous spinners in the village of Carabuela, and the knitting of sweaters by the campesino women of southern Carchi. Among the sweater knitters are large and small scale entrepreneurs ("mayoristas" and "minoristas"), and independent knitters and piecework knitters who work for the entrepreneurs. The distribution of sweaters involves four distinct marketing channels: direct sale to individuals and tourist shops, sale to indigenous buyers and craft dealers, sales to nationally based export agents, and direct sales to foreign exporters. Figure 1 has been prepared to illustrate the flows of products and credit among the various participants in the sweater industry. Production and sales occur throughout the year, with volume and prices falling in the months after Christmas and rising in May through October.

Spinners

Spinners from Carabuela buy raw wool in the regional markets; while also farming, most of the 150 families in the community spin thick single ply raw wool.⁴ Both men and women prepare and spin natural white, black, brown and gray wool. Two or three adults can produce 30 to 50 skeins a week; if the family has several children helping clean and card, they can produce 100 skeins. One hundred pounds of raw white wool purchased in the Otavalo market for 1,200 sucres will yield 50 to 55 twelve ounce skeins which sell on the average for 40 sucres a skein. Spinners' wages are thus 16 to 18 sucres per skein, a total family income of 400 to 900 sucres per week for spinning 30 to 50 skeins. Since the modal sweater requires three skeins, spinners' wages per sweater are about 51 sucres, 20 sucres less than those of piecework knitters.

The bulk of the yarn is purchased by entrepreneurs from Mira who make the two and one half hour bus trip to Carabuela each week or two. After hurrying to secure the production of their established suppliers, they then seek out any other available wool. Each entrepreneur typically deals only with a few spinners; and spinners deliver to only a few clients. Because wool scarcity and market fluctuations affect both spinner and knitter, both attempt to maintain and enhance a relationship of mutual reciprocity and dependence. Competition for good yarn is such that entrepreneurs offer permanent credit and enter into compadre relationships. While few Mireñas travel to Carabuela for fewer than 40 or 50 skeins or enough for 12 to 16 sweaters, the large entrepreneurs buy 300 to 500 skeins when they can.

Sweater Producers

The census of the village of Mira in March 1979 disclosed 500 households with 2,275 persons. Two hundred thirty-four families reported a total of 349 persons knitting or working as entrepreneurs in the month previous to the census. Estimated total production in the four weeks prior to the interview totaled 1,900 sweaters, an average of eight per family or 5.5 per knitter.

The efforts of entrepreneurs to secure more knitters had spread the industry far beyond the village of Mira by 1979; workers from many of the surrounding rural hamlets and neighboring villages knit sweaters for Mira's entrepreneurs. These knitters generally live within one to one and a half hours travel from Mira, by foot, horse or truck. Recruitment of knitters is by woman-to-woman network and family ties. Mira is the local center where people from the surrounding parish come to attend mass on Sunday and do their shopping. Some independent knitters will come into Mira on Sunday to wait for sweater buyers to appear around the plaza. There are groups of knitters in San Isidro, La Libertad, El Angel, Bolivar, San Gabriel and possibly other communities in the province of Carchi. There are also knitters in Ibarra and several villages between there and Otavalo. While many of these places were visited to confirm reports of knitting, their production was not systematically investigated. Approximately one hundred pieceworkers living outside the village but working for Mirenas are not included in the production studies reported here, except in so far as they contribute to the average costs and returns of their employers. Based upon average production rates of knitters in Mira together with evidence collected about the numbers of knitters in various localities and the number of sweaters appearing in the Otavalo market, it was estimated that the 234 families found producing sweaters in the census in Mira are part of about 1,000 families in Carchi and Imbabura provinces producing at substantially the same rate.

Mayoristas

The Mayoristas are small entrepreneurs working both with their own capital and with credit from the National Development Bank. The credit flows are diagrammed in Figure 1. Mayoristas' exchange networks are geared towards maintaining a dependable work force and sufficient raw material to comply with their market. Depending on their scale of operation they can fill an order of 40 to 500 sweaters in four weeks. While other producers divide their time between sweaters, agriculture and commerce, mayoristas dedicate themselves exclusively to sweater production.

To produce sweaters, mayoristas employ part of their working capital in permanent loans to the best spinners in order to be assured of their production, and part in buying wool each week. To market their production mayoristas extend merchandise on credit to indigenous buyers who sell in the weekly "Indian" market. The balance of their capital is tied up in wool and credit for knitters. One entrepreneur described it this way, "You have to work with three capitals: one for the spinners and for wool purchase, a second for the knitters and a third for the sweaters given on credit to the dealers."⁵ Exporters sometimes offer mayoristas advances or else pay on delivery.

Mayoristas spend Thursdays or Fridays in Carabuela buying wool, and Saturdays and Sundays at home receiving sweaters from their knitters, giving out wool for the next week's work and dealing with the indigenous buyers from Otavalo. During the early part of the week new models are developed, sweaters are washed and orders are readied for delivery. While workers are paid regularly, good workers are loaned 200 to 2,000 sucres against future production as requested, usually without interest.

Minoristas

Minoristas are characterized by the small scale of their operation. While minoristas have two or three workers in one year they may hire out as pieceworkers the next. Frequently they continue other income generating activities and they maintain their enterprises at a scale in which one person can attend to the business and the family obligations at the same time. The production of a minorista's family may exceed that of her workers. Many of them knit for speciality markets.

Knitters

From the sample of 67 knitting families and 133 knitters it was estimated that Mira had 311 knitters in June and July (exclusive of entrepreneurs). At that time 54 percent of the knitters were working independently; 46 percent were working as pieceworkers. In terms of

reasons given for choosing a mode of production during their careers, the knitters fell into three sub-groups: those who have only worked as independents during their careers, those who choose to work only as pieceworkers, and those alternating back and forth, sometimes working in both modes simultaneously. About 50 percent choose to knit independently for two reasons: 1) earnings are better on each sweater, and 2) they have other family responsibilities, both domestic and agricultural, that prevent them from knitting at the regular rate demanded of pieceworkers.

The 25 percent choosing piece work exclusively reported that while they lacked the capital to produce independently, they feared borrowing to purchase wool. Others preferred the more secure income, especially in the slack season. The majority of this group were younger and had knit for fewer years. The remaining 25 percent had worked alternately as pieceworkers and as independents in the course of their careers, often simultaneously because of the lack of either capital or credit. Different family members frequently work in different modes and for different entrepreneurs.

Observations

Except for members of the original cooperative all of the present producers including some entrepreneurs began knitting as pieceworkers. There has simply been no other source of the necessary technical information concerning wool, knitting and markets. While about half of the women indicated that they were charged nothing for being taught to knit, the others were charged the knitting of one sweater.

While many learn by doing piecework the entrepreneur is quite likely to be a relative; most knitters indicated an unwillingness to teach others, particularly non-family members. Patterns and techniques were regarded as possible sources of market advantage and were not widely shared.

With enough wool for a week's production women begin to knit independently. Some women gave daughters the wool for one sweater when they graduated from primary school. Some families had provided or promised to provide the necessary capital so one of their older daughters could go into business as an independent minorista, reasoning that the daughter would thereby remain in the household. Of greater importance to the family economy than the wages which young women as well as young men kept for themselves, was their presence, which allowed all other adults greater flexibility to use their time and opportunities to best advantage. Any alternative employment would likely be sought in Quito. One father promised to provide his eldest daughter with capital to become a minorista so that she would stay at home. With her in the house there would be someone to look after and feed the younger children when his wife accompanied him on week-long trips to farm land far from Mira.

Sellers of Sweaters

Throughout the Americas the Otavalans are renowned traders of the woven goods produced by other Otavalans; in recent years they have included Mira sweaters, selling them as if they were Otavalan work. Otavalans had never knit sweaters for sale, the traders simply offered them as another "Indian" handicraft. They are among the craft dealers coming to Mira seeking a wide variety of sweaters. Some are willing to buy almost any quality if the price is low enough; independent knitters often sell initially to these buyers for lack of marketing expertise.

Those seeking higher quality work pay higher prices. After spending much time going from house to house teaching knitting techniques to knitters, one Otavalan woman residing in Ibarra has established a sizeable business selling to exporters while continuing to sell in the Otavalan market. She demands quality and requires that her styles not be produced for other buyers. If knitters deliver sweaters to her home, she pays cash for all the sweaters they bring, permitting them in turn to continue on to Carabela to buy more wool. She sends word to Mira when she will be arriving, and hires a car and driver to speed the operation. Because she does not provide raw material her business differs from that of the Mira entrepreneurs.

Other indigenous buyers from communities near Otavalo have a symbiotic relationship with the larger Mira entrepreneurs. These people buy a large quantity of medium priced sweaters which they resell, either in the market or to exporter contacts which originate in the market. Because the entrepreneurs prefer to sell a higher volume at lower unit profits so as to have available a large trained workforce, they permit the buyers to take the sweaters on credit. The entrepreneurs regularly lodge the buyers when they are in Mira and extend them personal credit as necessary.

Several Quito based dealers and foreign craft dealers come directly to Mira to order sweaters and return to hand select and pay for them. The Quito exporters are indigenous and non-indigenous Ecuadorian nationals and the large state corporation OCEPA (Ecuadorian Commercial Organization for Artisan Products) established to promote the export of artisan goods in 1964. French, German, Japanese and especially Canadian and U.S. buyers come to Mira for sweaters.

Some exporters also provide extensive training for their suppliers. One fashion designer for the New York boutique market comes each season with an exclusive line of designs. She supplies accessory threads and buttons and she has also experimented extensively with the development of special effects with materials produced in Ecuador; for example, she has worked with small commercial spinning firms developing yarns more useful to handknitters. Because the color effects she desires are difficult to achieve under the producers' working conditions, she has sought out Ecuadorian technicians to establish dependable procedures which are

then exchanged within her network of producers. Such innovations have become more generally available because there has been some turnover in producers working for her.

Once she has developed her new styles and worked out technical difficulties with her producers, she returns to New York with samples leaving a Quito associate in charge of orders and shipping. To offset the high cost of such training and technical assistance, any producer suspected of selling a model to a competitor before her entire order is safely delivered is simply denied further business. This is a very difficult standard to enforce fairly because women knit sitting in their doorways so production cannot be kept secret. A characteristic of the fashion market is its highly competitive nature and rival exporters come to bribe the naive. Other exporters leave the responsibility of acquiring materials to the entrepreneurs who have limited technical information and even less access to technicians' time to solve the problems of color fastness and color hue.

IV. Origins of the Project

In August 1965 the authors initiated a small scale handknitting project with the aim of increasing family incomes. Villagers in Mira had been responsive to a wide variety of 4-H Club and agricultural projects between October 1962 and 1965 with which Peter Gladhart had been involved. When Emily Gladhart was transferred to the village it was her responsibility to seek ways in which to improve living conditions by working with village women, but it was quickly obvious that the lack of cash resources accounted for them.

Having previously worked on a sweater knitting project in the southern Ecuadorian city of Cuenca that was unable to supply the sweater demand, the authors decided to attempt to use the basic product design in Mira. It was considered reasonable because the expatriot market in the nation's capital was largely untouched by the Cuenca project and the operational aspects of the income generating activity were familiar and transferable, in terms of availability of wool, spinners and knitters. The previous experience provided a basic compendium of knitting technology: specific stitches, styles and knitting constraints of the handspun wool. Certain new technology was easily introduced. Furthermore the parent project provided a tested pricing scheme which seemed enviable to the women who were approached to knit the first sweaters.

The Peace Corps authors bought several sheep fleeces in the hamlet of El Hato and contracted in Mira to have them spun like the sample brought from Cuenca. The spun wool was then delivered to the prospective knitters with a sample sweater to indicate size and sweater quality.

Technically the Mireñas considered the spinning and the knitting to be of low quality. They disliked the loosely spun, one-ply wool yarn since desirable handspun wool for weaving ponchos and

blankets was tightly spun two-ply wool. The knitting was considered crude because it was done on large needles to a knitting stitch gage unfamiliar and locally undersirable. The finished product was thought to be too heavy to be comfortably worn given local customs. While men wore heavy woolen ponchos, and women wore shawls, men, women and children wore bright colored, light-weight orlon sweaters. Commercial wool was both too costly for the project and lacked the homespun qualities which foreigners sought. In order to avoid the complex problems of dyeing wool, all dyed wool was avoided and sweaters were knit only in natural colors—white, brown and gray.

The sweaters had a redeeming grace. The level of earning suggested by the authors seemed literally too good to be true. Locally the appreciation of the sweaters increased quickly as the proposed earnings became a reality. Women could earn 68 sucres for knitting one sweater, more than 11 sucres a day for a six day week. As the appreciation increased, so did the ability to differentiate quality in the product by the knitters.

The sucre exchanged at approximately 20 to one U.S. dollar in 1966. A woman in Mira would have had to work at least eight days in the fields to earn 50 sucres, a man five days. In terms of buying power, a sucre would buy half a pound of rice, one and a half to three pounds of potatoes, one pound of refined sugar, or one quarter pound of wheat flour. Five sucres bought a good restaurant meal at the local cafe; 60 sucres bought a pair of men's shoes which would last six months; 90 sucres paid one day's room and board at an upper middle class hotel in Quito. The general local wage for a day's unskilled labor was eight to ten sucres; a carpenter might hope to command 20 to 25 sucres a day, a woman weaver between three and five. One of the original knitters earned a monthly salary of 100 sucres as postmistress in Mira before that political appointment was given to someone else after the 1962 elections.⁶

In the early period the commitment of the knitters was to the "gringitos", the initiators who accepted all the cash risks and agreed to try and sell the "unattractive" rustic product. Later, sales encouraged the women to knit more and attracted additional women to the activity so that by December 1965 the production needs of this larger group required some organization. Based on expectations of participation and democracy for self-help organizations which coincided with the cooperative form familiar to the knitters, the pre-cooperative "Manuafacturas Mira" was organized on February 5, 1966 with 28 members, women ranging in age from 14 to 55 years. The group decided that each member would invest 50 sucres as a membership fee which yielded a social capital of S/. 1,400 to be used to buy wool and reimburse expenses of members when assigned to marketing activities. The Peace Corps reimbursed the Volunteers' expenses.

The cooperative stressed the need for all members to learn how to purchase wool, control quality of knitting and market sweaters. Rotating committees were established to aid the learning of these skills. From the beginning the volunteers repeatedly advised the

women that they would leave in October, that if they found the sweater business useful, the members would have to learn how to operate and manage it.

Strict quality control standards were imposed which reflected the expectations of the expatriot market. Measurements were critical as was the care taken to properly clean the wool before spinning. These standards and the rigidity with which they were enforced were considered curious. Difficulties arose because there was no strict control over the weight of the spun wool and its elasticity; the stitch gage could not be duplicated from one sweater to another. The actual sizes seemed entirely too large for any human being the Mireñas were familiar with so the authors personally tried on each sweater and discussed strengths and weaknesses with the knitters and with the committee responsible for advising knitters.

Unprocessed wool was bought by the fleece in the Otavalan market as the group increased in number. Wool sellers stood behind small piles of two or three fleeces weighing a total of three to five pounds and buyers bargained for each bundle. Wool was stuffed into burlap bags as it was bought and taken to Mira on top of the public buses in which the women rode. The trip took more than three hours. It usually yielded 50 to 150 pounds of wool, enough to knit eight to 25 sweaters. Finally, before advancing five to six pounds of raw wool to members, the women dried the wool, shook the loose dirt out and sorted it for color and quality.

The individual members were responsible for washing the wool and getting it spun. About half sought someone within the family to spin, usually an older woman, and half paid local spinners. The cost of spinning approximated the cost of the raw wool. Members were free to secure wool independently as long as the wool met the standards set by the cooperative.

The rapid growth of the project was attributable to the level of earnings contrasted to the alternative employment options. Members had not come together in order to work cooperatively any more than had the men in the village who were buying land cooperatively. People came so as not to be excluded from an endeavor which might well prove beneficial.

One of the first women approached by the authors was the wife of the director of the primary school for boys. Both Senora Elisa Ulloa and her husband Senor Leopoldo Padilla had actively supported, encouraged and participated in the 4-H Club which had identified Mira to the authors as a responsive village in which to work. In retrospect in 1979 it was obvious that the responsiveness was due to the role school leaders played in providing an infrastructure which did not ignore the parallel and often competing networks which existed in the village, but instead created an environment in which men and women understood that community development was socially, politically and economically dependent upon the capacity of villagers to perceive private benefit from participation in community projects. The attitude which evolved among the villagers

convinced Peace Corps Volunteers, agricultural extension workers and representatives of national ministries of education, public works and the agrarian reform institute to undertake projects locally which did benefit the community and the individuals who participated in their realization.

From the time the pre-cooperative was organized, it was clear that the majority of men, husbands and fathers of the knitters, applauded the women's efforts and were pleased the women were earning more and consequently less subject to the patronizing treatment of the wealthy buyers of crocheted goods and gunnysacking. When one school teacher's wife told him that the cooperative had voted to retain a forced savings of ten sucres for each sweater sold, he replied, "Why didn't you vote 20, then you would have had some money for once in your life!" Another man's objection to his wife's work was reported with the commentary that he was an egotist and the other knitters encouraged their colleague to continue knitting in their homes and when he was away all week at work, a practice she continued in 1979.

When the organizers left Mira in October in 1966, the pre-cooperative had 40 members and assets of 6,500 sucres (U.S. \$325). Members were knitting two to three sweaters a month. Between February 1 and October 1, the cooperative had net earnings of 82,750 sucres (U.S. \$4,138) which the authors estimated to be equivalent to three percent of the agricultural production of the community.⁷ The pre-cooperative also regularly advanced small loans to members against future production, a practice continued by the mayoristas and minoristas in 1979. Sweaters were sold primarily through established contacts in Quito, the nation's capital. Many special orders were also taken. The cooperative had a president, a secretary and several members able to teach knitting skills and maintain quality standards. The only paid employees were two members trained by the organizers in double entry bookkeeping. One of them resigned at the request of the group before the organizers left the community.

In taking up knitting the women were shifting from less profitable activities to more profitable ones, particularly in terms of cash, a necessary resource for people who had already made commitments to educate children in secondary boarding schools. Some women gave up low wage artisan or agricultural work, others reduced some kind of household production for home consumption. Many worked extra hours initially, fearing the activity would be a short-lived windfall. In any event it seems inappropriate to talk about reduction of underemployment since there was little evidence of replacement of idleness in 1966.

The 40 initial members represented 30 families; most women had received some primary education, although a majority of those over 25 years had not completed the sixth grade, or Ecuadorian primary school. Only two had completed secondary school. Most of the women over 25 helped support families. Some of the women were among the moderately well off in Mira in 1966, others were among the poorest.

All were drawn from the local pool of those most ready and able to take up a new, change-inducing endeavor.

Growth After 1966

The preceding discussion of project origins was based upon a description drawn up in 1967. As indicated in the methodology, the information about developments between 1966 and 1979 comes from oral histories collected in 1979 and from the record books of the cooperative.

Acquisition of wool was a problem until spinners from the village of Carabuela began to travel to Mira in 1972 with spun wool. Women still remember with relief this apparent solution to the vexations of wool acquisition and processing; conversations with many original members and non-members in 1979 suggested that this alternative seemed simply to appear. An unplanned consequence was that many non-members found it easy to begin to knit as wool became more generally available.

Cooperative membership had been limited initially by the organizers to a number they were able to advise and direct. The principle criterion was residence within the village so that attendance at meetings could be realistically required. Many conversations in 1979 with original members and non-members indicated also that members discouraged expansion covertly after organizing demands had diminished. It is clear in retrospect that many had not been eager to share the new opportunity outside the circle of the families already involved. From the beginning women used family members and relatives living in Quito to help with market seeking, merchandising and wool buying. Another means of facilitating family use of the cooperative was for members to present the knitting of sisters, aunts and cousins as though it were their own, thereby increasing participation while maintaining the norm of closed membership. This strategy for family network enhancement was only discussed openly with the organizers in 1979 — and then only by some women who had been non-member beneficiaries of the practice.⁸

The successors to the Peace Corps Volunteers returned all of the common assets to the members, not wishing the responsibility the new volunteers had themselves assumed. Soon after this the villagers requested that the new volunteers leave town. In the words of one informant, "For once we had something and we were not going to lose it." The cooperative continued to influence the development of the industry, however, through the establishment of linkages into the national society. The national and provincial governments began assisting the participation of artisan cooperatives in international art fairs in coordination with the regional trade agreements of the Andean Pact countries. Many women said that this participation was critical in the opening up of the export market to the entire community when exporters started coming to Mira to search out sweater knitters. Because some women were willing to risk filling large

export orders, many new knitters were sought out who joined the ranks with easy access to information regarding wool and knitting techniques. While some women began developing entrepreneurial skills, others simply added knitting to their existing income generating activities. Although the cooperative increased its sales each year, it shrank in relative importance as an institution compared to the large number of new family enterprises. When the cooperative disbanded in March 1972, it had dwindled to 18 members.

The National Development Bank's offer to extend loans to individual producing artisans, under terms more favorable than to farmers, encouraged women to apply with the support of their husbands. Women benefitted because the bank's line of credit was specifically for artisan production and was available to local branches of the bank for distribution within the province. Though the program was geared neither to rural people's need for improved access to credit nor to the particular needs of rural women, it served both women and the community. With two year loans available for the first time, women and men worked together to exploit total family resources more efficiently. Since crop loans were for no more than one year, the availability of two year artisan loans to farming families increased the total investment funds available. The knitter's credit could be used to meet farm cash shortages; crop sales could be used to help make payment on knitting loans.

Because the bank has consistently favored requests for large artisan loans, large loans have encouraged recipients to seek ever greater numbers of knitters. While men and widowed women use land as guarantees for agricultural loans, knitters use sewing machines, typewriters and stereo systems to secure wool loans. In 1978, 83 loans were extended for 2.3 million sucres, which in total meant there were about five million sucres outstanding. The average loan size of 27,710 sucres is 80 percent of the average total capital of seven mayoristas discussed in production section that follows (See Table 4). Five minoristas averaged 8,106 sucres in working capital. Most knitters interviewed suggested 5,000 to 10,000 sucres as the capital necessary if they were to go into business as small entrepreneurs.

V. Production and Earnings in the Sweater Industry

Pieceworkers and independents were knitting an average of 1.38 sweaters per week at the time of the March census when demand is seasonally low. The sample interviewed in June and July were knitting 1.6 sweaters weekly.⁹ Within the 67 knitter families interviewed, ten percent of the persons knitting in March were not knitting in June and July and 16 percent of the 131 persons knitting in June and July had not been knitting in March.

The authors collected information on sources and costs of raw materials, travel and other expenses, rates of production and sales prices or wages in the interviews. The majority of independent knitters buy their wool in Mira from Carabuela spinners or Mira

dealers. Apart from wool cost, the principal expense for these knitters is three to five sucres to wash a sweater and three to four sucres to purchase palm nut buttons for cardigan sweaters. Wool during 1979 cost 120 to 140 sucres per sweater. Table 1 has been prepared to show mean values of age, years knitting, production and net income for knitters. Independent knitters were on the average 5.6 years older than workers and had 2.5 more years of experience. They knit at the same rate per week but their net earnings were 37 sucres more per sweater and 56.5 sucres more per week than the wages of the workers.

The group means of Table 1 obscure substantial variation in production and earnings within both modes of production. In Table 2, knitters have been stratified by level of weekly production and by mode of production for those knitting two sweaters per week or less. Nearly half the population represented by this sample knit slightly more than one sweater in two weeks while 21 percent knit three or more in one. Thus while 47 percent earned less than 200 sucres per month as knitters, 11 percent earned 625 sucres and 43 percent earned more than 936 sucres per month (calculating a month as 4.3 weeks). Knitters producing more than three sweaters a week are primarily workers and they have fewer years of experience than those producing two to three sweaters. Persons knitting at this rate in general cannot produce the larger, high quality, higher priced sweaters. The apparent strong association between years of experience and earnings per sweater supports our observations of the variation in quality of work between different knitters. The differences in the earnings per sweater of independents knitting less than one sweater per week and one to two per week reflect differences in both size and quality produced. Further standardization by quantity of yarn should reduce this difference.

It is likely that Table 2 overstates the differential between earnings per sweater of workers and independents. Workers appropriate some portion of the wool given them -- the practice is everywhere acknowledged but the rate is in dispute. Appropriating enough wool for a small 200 sucre sweater out of every six turned in would make the earnings of workers and independents equal for seven sweaters knit.

Women and men in Mira earn income and allocate that income as individuals, but they do it within the context of families whose support is a shared responsibility. Table 3 has been prepared to show the contributions to family income of the earnings of individual knitters. Knitter families produced on the average 2.7 sweaters a week in June and July equivalent to a net addition to family income of over 1,000 sucres a month, nearly 40 dollars. The reader is cautioned that annualized monthly income will be somewhat lower for all producers because of market slack from January through March or April.

An indication of the costs of alternative investments and of consumption needs helps place these earnings in perspective. A heifer in Mira was worth about 3,000 sucres and a cow 5,000. Milk

sold for 2.5 to three sucres a liter on a monthly contract basis. A young pig could be purchased for 250 to 400 sucres and sold after fattening for 1,000 to 1,500. A laying hen was worth 160 to 190 sucres and her eggs could be sold for two sucres each. A kerosene stove cost about 450 sucres, a pressure cooker 700. Sewing machines cost 10,000 sucres, a refrigerator 8,000 to 15,000; freezers or soft ice cream machines were purchased by Mireñas for 15,000 to 30,000. A portable typewriter needed by secondary school students in typing classes cost 2,000 to 4,000 sucres. A small piece of bread sold for one sucre, rice for seven sucres a pound, sugar 3.8 sucres, coffee 25. Cooking oil sold for 150 sucres per gallon and potatoes for 220 per hundred weight. Many women have an avocado tree and sell avocados for five sucres each.

Table 4 contains mean values from a sample of seven mayoristas with six or more knitters and five minoristas with one or two. The mayoristas had on the average 15.8 workers who turned in 33 sweaters per week. Their mean wool purchase was 148 skeins per week valued at 6,446 sucres. For the 231 sweaters received, mean costs were 209 sucres, the value of sweaters sold in the preceding two to three weeks was 254 sucres and mean earnings per sweater were 45 sucres. Total business earnings were 1,644.51 per week, or 1,216 per family worker. Monthly earnings per family worker were 5,229 sucres, equivalent to that of a secondary school teacher in Mira with two years of experience. By contrast the minoristas operate at about one fourth the scale of the mayoristas. They purchased an average of 36 skeins of wool worth 1,644 sucres. The output of their hired workers was only one sweater more than was produced in the family of the minorista. Their earnings per family worker of 333 sucres per week and 1,430 per month were between one third and one fourth those of the large entrepreneurs.

The mean capital employed by the mayoristas was 34,449 sucres (\$1,300). The mean outstanding bank loan of these entrepreneurs was 7,000 sucres. Velocity of capital measured as the ratio of capital to weekly sales was 4.11 weeks. The ratio of mean annual net income to mean capital employed is 2.38. The minoristas turned over their capital slightly faster and their annual income was a higher multiple of their working capital, 2.93 to one. However, the comparison is not entirely fair since more than half of their income was returns to family labor, not capital. One of the five minoristas interviewed had an outstanding loan of 1,500 sucres.

To put these earnings in further perspective, a woman running a small shop in Mira selling foodstuffs and household articles purchased inventory valued at 17,858 sucres and had sales of 19,950 sucres during a 14 day period in 1980, a gross margin of 2,091 sucres or 11.7 percent. Her total working capital was between 10,000 and 15,000 sucres and she had expenses of about 350 sucres a month for rent and electricity. A young woman with two years of secondary education could earn 1,500 sucres per month as a sales person in a Quito bluejeans shop.

Compared to the average knitter, mayoristas are eight years older, on the average, and have been knitting three years longer,

though they were knitting very little currently as the earnings figure indicates. Their income of 44.58 sucres per sweater represents payment to both management and capital. The mayoristas earn 7.6 sucres more per sweater than the average differential between knitters who knit more than one sweater per week (See Table 5). The returns to the mayoristas' economies of scale, greater experience, control of valuable information and general business skills is 11.5 percent in excess of those commanded by the typical independent knitter producing at least one sweater a week.

Mayoristas do have a degree of market power in the purchase of wool, achieved at the cost of steady loans to the spinners. This causes resentment on the part of independents and minoristas traveling to Carabuela only to find scarcity and higher prices during times of peak demand or restricted supply. Workers who live one or more hours into the countryside from Mira have difficulty finding buyers for their sweaters regularly or knowing exactly what their work should be worth. For many, doing piecework is the only possibility of having a regular income from knitting and access to credit. Access to credit makes it an attractive alternative to raising small animals. The involvement of these workers in the industry and the recent presence of independents and entrepreneurs in other communities is the result of Mirenas going ever further afield in search of additional workers.

The technical skills that knitters acquired in the original cooperative still give an advantage to those former members who remain in the industry. They tend to produce higher quality products, do a better job of fitting products to specific markets and have on the average a greater store of economically valuable information concerning locations of buyers, wool handling, dyeing techniques and dealing with foreigners.

Successful entrepreneurs must be accessible to knitters, proficient in the techniques of effective personnel management and skilled as knitters to keep production and quality at profitable levels. In the authors' judgement it is this combination of skills together with the availability of credit since the early days of the industry that explain why no non-artisans and no outsiders have so far established themselves as entrepreneurs. The latter is often the case in cottage industries organized on a putting-out basis; for example several of the Mexican crafts reviewed by Littlefield have this characteristic.¹⁰

There is a high degree of competition in the sweater industry. Because entrepreneurs compete for good knitters the market for female laborers is reasonably fluid. Young unmarried women also consider and experiment with wage labor in the urban centers. Similarly, alternative uses for capital exist for women primarily in commerce and retail trade but also in land and livestock. Sweater buyers compete for products of various grades especially the higher quality, higher priced articles.

The one feature of the sweater industry that stands out in sharp contrast to a conventional view of an open competitive market is the

absence of anything approaching open and complete access to information. Sweater producers have particular information concerning the people in their network, the kinds of work they can do, the reliability of different individuals, and the prices others will pay for a particular item. What is conspicuously missing is generalized knowledge about the typical prices received by most producers for certain types of items, the typical sizes demanded by different markets, general solutions to technical wool dyeing problems and the relative cost, profits and strategies of other producers. This is evidence of a family network management strategy where information or knowledge is the critical, scarce input. For most people in Mira, control of information might mean achieving better than average results. This applies not just to sweater producing but to all economically important activities in circumstances where scarce resources mean that all activities have economic importance for households.

VI. Assessment

The findings highlight the fact that economic survival strategies are organized around the extended kin network, not the nuclear family. Learning, knitting and selling piecework tend to occur within kin networks, as does much selling of finished products. This suggests that the effects of economic development are mediated by the social structure. Although new products are being produced, the production occurs within old social forms, the family's economic structure has persisted in elaborated form to capture new potentials.

The economic benefits from the industry are substantial to individual family networks and to the community. Furthermore the earnings represent part of the rural sector's contribution to the national society into which villagers are attempting to become integrated. It was estimated in 1966 at three percent of gross agricultural output of the community. The value of the Mira earnings from 1900 sweaters a month in 1979 was approximately 2.3 million sucres, or U.S. \$87,000. If one half of these were exported at \$10.00 each (265 sucres), the foreign exchange earnings would be \$112,000 per year. If half the estimated production of 6,000 sweaters a month in northern Ecuador were exported, the foreign exchange earnings would be triple that amount.

Eleonora Cebotarev¹¹ has proposed criteria for non-oppressive adult education programs for rural women in Latin America that seem equally appropriate for the post hoc evaluation of development experiences such as this case:

- (a) The time and energy requirements of domestic work should be reduced so that women can perform these central tasks more effectively and yet have time for other roles;

(b) Women should be provided means of earning extra income together with the status and control that it conveys without undermining their base prestige and status granting roles as wives and mothers;

(c) Women must be provided the opportunity for personal learning, growth and development, for learning new skills and criteria for evaluating potential new social roles.

Cebotarev's second criterion has been extensively addressed in this paper. Women in Mira have had the opportunity to increase their incomes on a sustained basis and according to both women and men, this has enhanced rather than undermined their status as wives and mothers due to their enhanced capacity to contribute to family economic security.

Initially, women earned relatively high wages for the time spent knitting. In addition to the criterion that women have the time requirements of their domestic responsibilities reduced so as to have time to devote to income generation and other pursuits, it would be important that the wages women can earn keep pace with inflation, or they will be reduced to working harder for less and less. The evidence on these two issues is interrelated and can be addressed jointly.

Earnings per sweater in current sucres have increased about 30 percent. While the sucre has fallen to one third its 1967 value, the style of the sweater has changed through the use of much heavier yarn so that the time required to knit a sweater has decreased by 25 to 50 percent. While the production norm in 1966 was two to three sweaters a month, in 1979 it was six to nine, with time availability still the principal determinant. If one assumed that the time available had remained constant, then the current weekly earnings are at least as high in real terms as those of 1966, but they are expanded to a much larger population. In fact, the time available to knit has increased markedly as women have invested their earnings in technology that has dramatically reduced the time required to prepare food and wash clothes.

Women have substituted kerosene, propane and electricity for firewood and have bought pressure cookers. They have shifted to greater consumption of rice over potatoes and use of commercially prepared bread and foods. They have adopted polyester clothing and purchased electric irons. Changes in the school day have meant that school children are available after 1:30 to run errands and assist in caring for toddlers. The presence of the knitting option has meant that young women finishing elementary school have been encouraged to stay home and knit rather than seek employment as domestic servants in the cities. This and the locally available secondary school attended by about 175 Mira young people, has also meant more people around the home to help with laundering, cooking, and child care. With greatly enhanced local transportation alternatives and the option for women to earn cash wages knitting, there is much less carrying of lunches by women to men working in the fields. The

majority of Mira men have become small land owners who are now obligated to supplement the wages of their daily workers with a lunch. Many own several plots and arrange their work schedule at different plots to accommodate eating the noon meal at home.

The changes are a combination of investments by women in labor saving alternatives and general shifts in peoples' roles and availability occasioned by economic development in the village. Women not only have more time to knit, they have more time to travel, and since travel time has been so markedly reduced, they travel much more.

When the knitting cooperative was begun in 1966, much time was spent discussing the characteristics of desirable employment and the importance of artisans charging a decent wage for their products. The cooperative required women to learn new skills of merchandizing, production to uniform standards and the evaluation of artisan products based upon technical rather than personalistic standards. But this initial effort to provide women with opportunities to explore new options and possible new roles was only one part of a long term process of autonomous community development. Schooling and the process of education had served to promote a continuous re-examination of alternatives and their adaptation as the village has responded to changes in the larger society.¹²

The continuing evolution of the sweater industry since 1966 has required women to learn new roles, to deal with urban people and institutions, and with foreigners of many types. They have learned much about their own capacities as business women and artisans and have elaborated new forms of cooperation and support both within and between their family networks.

VII. Family Networks and Autonomous Community Development

In assessing the role that an "action anthropologist" can play in community development intended to promote the ethnic survival of an Ecuadorian lowland forest tribe, James Yost argues that the tribe must ultimately take the responsibility for choosing how it will adapt its culture to that of the encroaching dominant society.¹³ The anthropologist should help people understand their alternatives and the various implications for important parts of their culture, but then the community developer should withdraw for a time so that the tribe can experiment with and choose its own mode of adaptation.

Sweater knitting in Mira has been but one of a series of changes since 1939 exemplifying the point that community development based on enhancement of the traditional form of economic organization, the extended family network, has the potential to maximize local autonomy and control over the nature and direction of change by making local people responsible for it. Sweater knitting has complemented and facilitated the other family investment strategy of Mira families, the purchase and farming of small plots of land. The villagers, little by little, purchased nearly 5,000 hectares of

arable land between 1949 and 1974. Sweater knitting and agriculture together have permitted families to maximize their access to credit and develop their family resources in multiple ways.

A wide variety of crops are grown due to the area's ecology. Some crops are lowland tropical crops, others are high elevation, cold weather crops. Some areas at all elevations are extremely dry and others benefit from adequate rainfall. Because of these growing conditions many small supply and demand networks have been established. These networks reflect both product demand and producers' labor requirements. This interdependency is also acknowledged by the knitters. People regularly help one another complete large orders, putting aside personal chores temporarily. Before these networks were as refined as they were in 1979, the story is told of how the first large order of 500 sweaters was completed which had been accepted by an ambitious entrepreneur not wishing to let an opportunity pass by.

Village pride was at stake, and also future orders from OCEPA. Before the order was completed, men were being told to "take their meals at the local cafe" because there was no time to cook. While the knitting labor force has greatly expanded to accommodate the market, minoristas and independent knitters frequently produce for local mayoristas when they need the production. The concern is always that the mayoristas will seek knitters elsewhere and conversely mayoristas are unable to extend the benefits to untold numbers of new pieceworkers. Because all economic strategies are interwoven, it behooves everyone not to jeopardize existing networks but actively maintain them. Helping someone is perceived to be a means of maintaining a network's legitimacy.

Mira has enjoyed substantial local development of human and nonhuman resources under local control, subject to local norms. But this development has not equipped people to move into the modern sectors of the economy, including the more lucrative export sector of the sweater industry. Most rural producers in Mira, agriculturalists and sweater knitters alike, know that they are disadvantaged vis-a-vis the modernizing sectors of the economy and that their children cannot be expected to stay in the village. They are attempting to transfer their resources into the modern sectors by investing in their children's education, "The only inheritance we can leave them."

Parents have told their children that they have no future in Mira and sent them to get secondary and university education. Mira university students majoring in economics have not yet made the connection that their village plays an important part in international trade and that their education might serve them in exploiting that fact. Rural education is geared toward urbanizing its students, not towards teaching them how to develop the rural sector. Families educate their children so that they may find security in a known, urban based profession.

Ultimately the case study of Mira elucidates the major constraints and opportunities involved in rural development.

Without local autonomy, the opportunities inherent in a redistribution of resources at the local level fail to maximize the development potential of local production. Conversely, without a national commitment to integrate rural development into a national scheme geared towards restructuring political and economic goals, local development improves the level of living but continues to develop the human capital to forsake the local environment in the hope of continuing a process of enhancement of the family network.

FOOTNOTES

1. This is a revised and expanded version of a paper presented at the 1980 joint meetings of the Latin American Studies Association and the Midwest Association of Latin American Studies, Bloomington, Indiana, October 17-19, 1980 (Original title: "The Sweater Knitters of Mira, An Account of a Regional Cottage Industry Developed by Rural Women"). The research on which the paper is based was conducted under the auspices of the National Development Council of Ecuador between January 1979 and March 1980. Support for the research was provided by fellowships from the Inter-American Foundation and the Fulbright-Hays Faculty Research Abroad Program as well as a sabbatical leave from Michigan State University for Peter Gladhart during 1979. Ing. Marco Jaramillo, director of the Rural Development Unit of the National Development Council, provided guidance and facilitated the research at several important junctures. The paper has benefitted from the helpful suggestions of Ann Millard, Linda Nelson, Carl Liedholm, Dora Lodwick, Lillian Phenice, Beatrice Paolucci, Margaret Bubolz, and two anonymous reviewers.
2. The bases for these estimates are provided in section III.
3. Peter Michael Gladhart and Emily Winter Gladhart, "Manufacturas Mira: A Low Investment High Yield Community Development Project (Unpublished mss., Cornell University, 1967).
4. Based upon investigations of the authors and Peter C. Meier, "La Situacion Socio-Economica de los Artesanos Textiles en la Region de Otavalo" (Mimeo, Quito: Facultad Latinoamericana de Ciencias Sociales, FLASCO, y Instituto Otavaleño de Antropologia, IOA, 1978).
5. "Hay que trabajar con tres capitales, uno para los hilanderos y la compra de la lana, otro para las tejedoras y el tercero para los sacos fiados a los comerciantes." (Authors' translation.)
6. Gladhart and Gladhart:12.
7. Gladhart and Gladhart:15.
8. The authors are deeply indebted to the work of Larissa Adler Lomnitz, Networks and Marginality (New York: Academic Press, 1977), for the conceptualization of the network of reciprocal exchange as the basic survival mechanism of families with very limited resources. Although this paper does not treat the networks of Mirenas in depth, the concept greatly clarifies the meaning of activities and interrelationships observed among people whose resources, while limited, were much more abundant than those of the people of Cerrada del Condor described by Lomnitz.

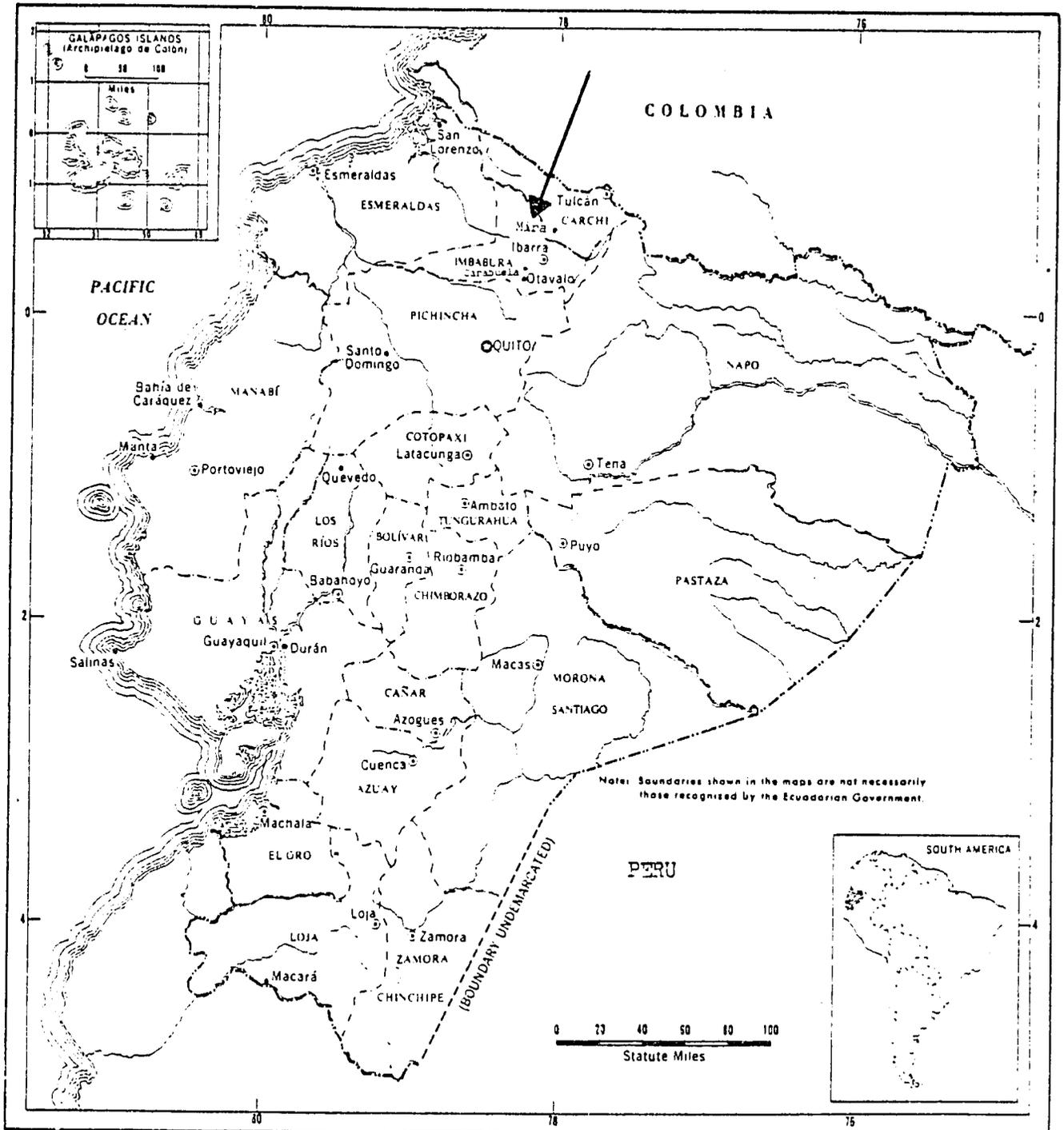
9. The data reported represent a population of 311 knitters, 15 mayoristas with six or more non-family workers and 12 minoristas with one or two workers. Due to the weighting of the samples, the tables are designed to reflect the estimated number and percent of the village knitting population represented. Standard deviations for the tabulated values are presented in the appendix.

10. Alice Littlefield, "The Expansion of Capitalist Relations of Production in Mexican Crafts," Journal of Peasant Studies 6 (July 1979):471-488.

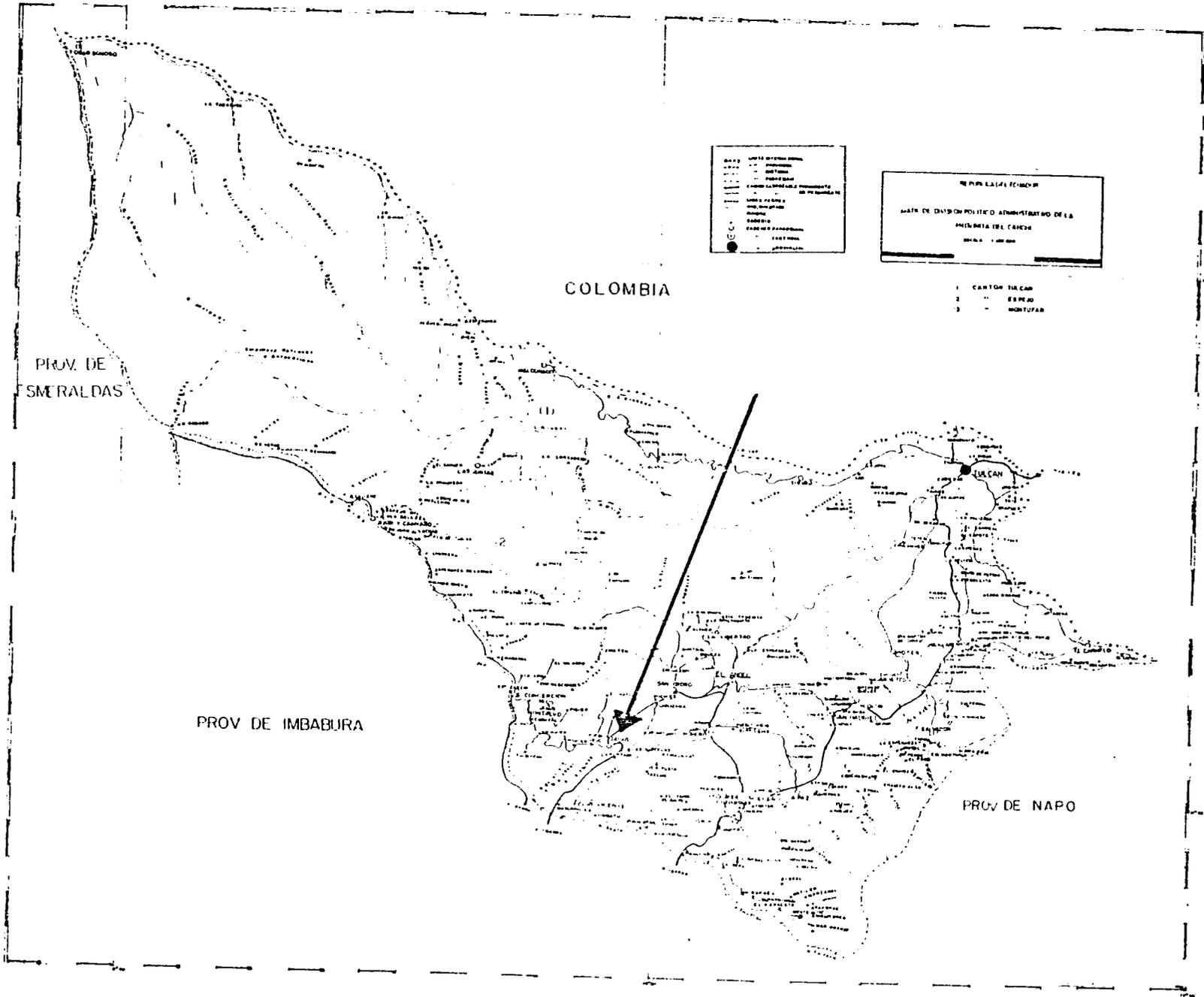
11. Eleonora A. Cebotarev, "A Non-Oppressive Framework for Adult Education Programs for Rural Women in Latin America," Convergence 13 (No. 1-2, 1980):34-49.

12. Emily Winter Gladhart, "To Be Educated is To Be Cultured: Schooling and Development in an Ecuadorian Village" (M.A. thesis, Michigan State University, 1981).

13. James A. Yost, El Desarrollo Comunitario Y La Supervivencia Etnica: El caso de los Huaorani, Amazonia Ecuatoriana, Cuadernos Etnolingüísticos, No. 6 (Quito: Instituto Lingüístico de Verano, 1979).



Map 1. ECUADOR



Map 2. Province of CARCHI

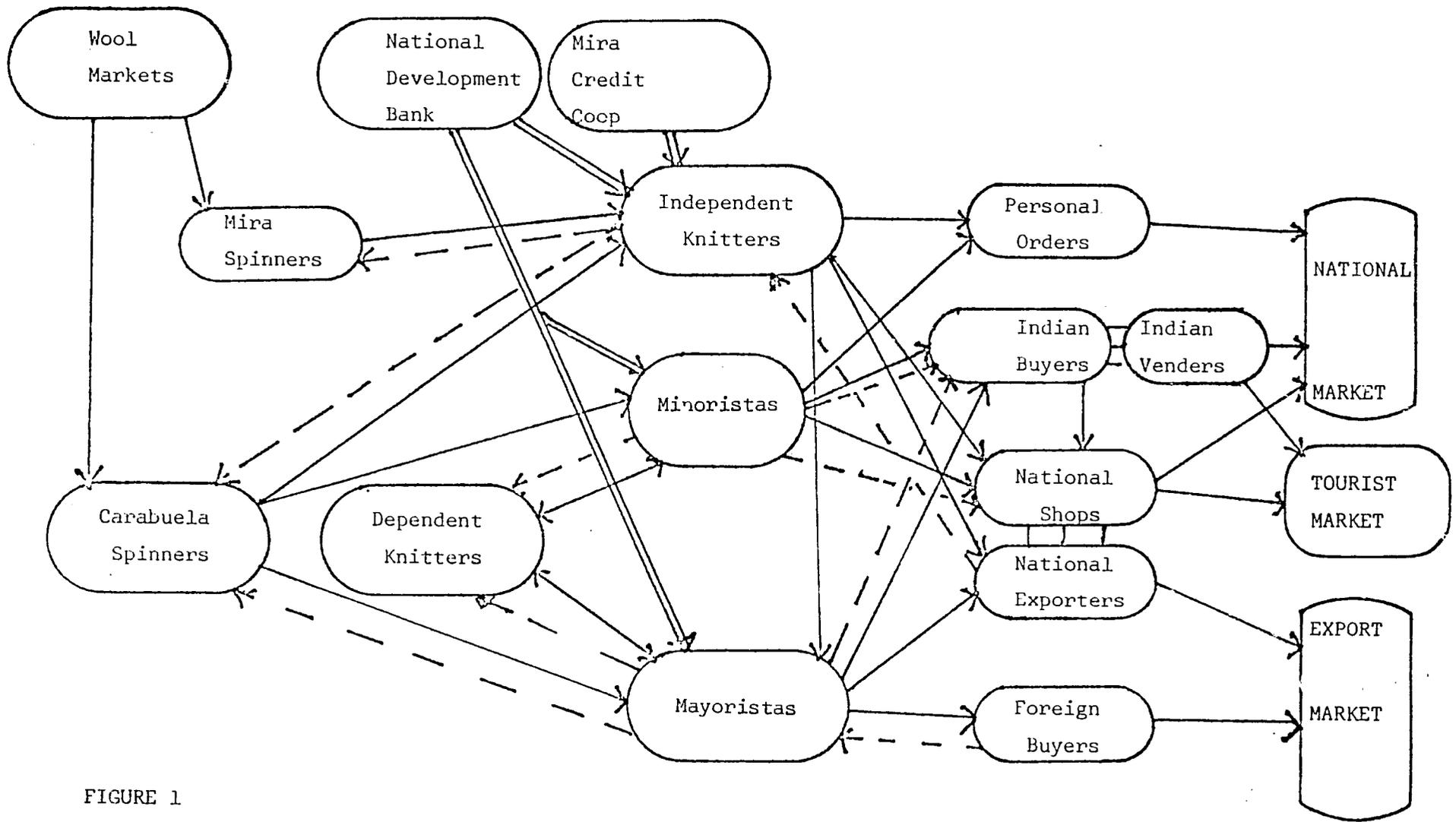


FIGURE 1
 PRODUCT AND CREDIT FLOWS IN THE SWEATER INDUSTRY, MIRA, ECUADOR, 1979.

Legend:

- Wool and Sweaters
- Long term Credit
- Short term Credit

TABLE 1

INDIVIDUAL PRODUCTION AND INCOME OF SWEATER KNITTERS BY MODE OF PRODUCTION
MIRA, ECUADOR, 1979

	<u>Sample</u>	<u>Estimated Population</u>		<u>Age</u>	<u>Years Knitting</u>	<u>Sweaters Per Week</u>	<u>Net Income Per Week</u>	<u>Income Per Sweater^a</u>	<u>Monthly Income</u>		
	<u>n</u>	<u>N</u>	<u>%</u>	-----mean values ^d -----							<u>Sucres^b</u>
Pieceworkers	72	143	46	26.2	4.1	1.62	112.28	69.2	482.80	18.20	
Independent Knitters	61	168	54	33.8	6.8	1.59	168.80	106.0	725.84	27.39	
All Knitters	133	311	100	30.3	5.5	1.60	142.82	89.03	614.13	23.17	

^aIncome per sweater computed as Net Income per Week divided by Sweaters per Week.

^bMonthly income in Sucres computed as Net Income per Week multiplied by 4.3.

^cSucres converted to dollars at an exchange rate of 26.5 to 1.

^dStandard deviation for age, experience and production estimates are presented in the appendix.

TABLE 2

INDIVIDUAL PRODUCTION AND INCOME OF SWEATER KNITTERS BY LEVEL AND MODE OF PRODUCTION
MIRA, ECUADOR, 1979

Sweaters Per Week and Mode of Production	Sample <u>n</u>	Estimated Population		Age	Years Knitting mean values ^d	Sweaters per Week	Net Income Per Week	Income Per Sweater ^a	Monthly Income	
		<u>N</u>	<u>%</u>						Sucres ^b	Dollars ^c
I. Total, <1 sweater	53	145	47	27.1	4.2	.59	45.66	77.07	196.34	7.41
Piece Workers	31	79	25	22.7	3.5	.66	45.84	69.24	197.11	7.44
Independent Knitters	22	66	21	32.6	4.9	.51	45.43	89.24	195.35	7.37
II. Total, >1 and ≤2 sweaters	45	101	33	34.1	6.4	1.95	195.41	99.41	831.66	31.38
Piece Workers	21	34	11	31.4	5.2	2.00	145.32	72.66	624.88	23.58
Independent Knitters	24	67	22	35.6	7.1	1.92	217.81	113.57	936.58	35.34
III. Total, >2 and ≤3 sweaters	19	41	13	28.1	8.3	2.93	286.72	97.96	1232.90	46.52
IV. Total, >3 sweaters	16	24	8	31.6	5.0	4.02	271.08	67.42	1165.64	43.99
All Knitters	133	311	101 ^e	30.3	5.5	1.60	142.82	89.03	614.12	23.17

^aIncome per sweater computed as Net Income per Week divided by Sweaters per Week.

^bMonthly income in Sucres computed as Net Income per Week multiplied by 4.3.

^cSucres converted to dollars at an exchange rate of 26.5 to 1.

^dStandard deviation for age, experience and production estimates are presented in the appendix.

^eTotal does not equal 100 due to rounding.

TABLE 3
 FAMILY SWEATER PRODUCTION AND KNITTING INCOME BY MODE OF PRODUCTION
 MIRA, ECUADOR, 1979

Mode of Production	Sample		Estimated Population		Sweaters Per Week	Net Income Per Week	Income Per Sweater ^a	Monthly Income	
	n	N	%	----- mean values ^d -----				Sucres ^b	Dollars ^c
Piecework	30	68	36	2.86	200.75	70.19	863.23	32.57	
Independent	31	104	56	2.27	243.27	107.16	1046.06	39.47	
Mixed Independent and Piecework	6	15	8	4.74	390.00	82.28	1677.00	63.28	
All Families	67	187	100	2.68	239.70	89.44	1030.70	38.89	

^aIncome per sweater computed as Net Income per Week divided by Sweaters per Week.

^bMonthly income in Sucres computed as Net Income per Week multiplied by 4.3.

^cSucres converted to dollars at an exchange rate of 26.5 to 1.

^dStandard deviation for production estimates are presented in the appendix.

TABLE 4

PRODUCTION, INCOME AND SELECTED CAPITAL MEASURES
FOR TWELVE ENTREPRENEURS, MIRA, ECUADOR 1979

	Mayoristas N = 7	Minoristas N = 5
	<u>Mean Values</u>	
Age of Entrepreneurs	37.8	46.8
Years of Knitting	8.7	11.8
Years as Entrepreneurs	4.5	4.8
Number of Family Workers in Business	1.36	1.42
Number of Piecework Knitters	15.8	1.42
Sweaters Received Per Week	33.0	4.9
Sweaters Knit by Family Per Week	.6	3.8
	<u>Sucres</u>	
Cost Per Sweater	209.29	194.25
Sales Price Per Sweater	253.87	224.93
Earnings Per Sweater Received	44.58	30.68
Family Knitting Earnings Per Week	54.57	321.92
Business and Knitting Earnings Per Week	1,641.51	472.25
Weekly Earnings Per Family Worker	1,216.00	332.57
Monthly Earnings Per Family Worker	5,228.51	1,430.05
Monthly Family Earnings	7,058.49	2,030.68
Total Capital in Circulation	34,449.00	8,106.58
Capital Velocity in Weeks (total capital/weekly sales)	4.11	4.19
Annual Income/Total Capital	2.38	2.93

TABLE 5
 RETURNS TO LABOR AND CAPITAL IN SWEATER KNITTING
 BY MODE AND LEVEL OF PRODUCTION
 MIRA, ECUADOR, 1979

<u>All Knitters</u>	<u>Earnings/ Sweaters</u>	<u>Differences</u>
Independent	106.00	
Piece Workers	69.00	37.00
I. Level \leq 1 Per Week		
Independent	89.24	
Piecework	69.24	20.00
II. Level $>1 \leq 2$ Sweaters Per Week		
Independent	113.57	
Piecework	72.66	40.91
III. and IV. >2 Sweaters Per Week		
Independent	103.00	
Piecework	64.00	39.00
Entrepreneurs Earnings/Sweater		44.58

APPENDIX TABLE A.1

MEANS AND STANDARD DEVIATIONS FOR INDIVIDUAL PRODUCTION AND INCOME
OF SWEATER KNITTERS BY LEVEL AND MODE OF PRODUCTION
MIRA, EQUADOR, 1979

Sweaters Per Week and Mode of Production	Sample	Estimated Population		Age	Years Knitting	Sweaters Per Week	Net Income Per Week
	<u>n</u>	<u>N</u>	<u>%</u>	-----mean values-----			
I. Total, <1 sweater	53	145	47	27.1 15.4	4.2 3.59	.59 .41	45.66 37.77
Piece Workers	31	79	25	22.7 11.78	3.5 2.76	.66 .43	45.84 29.58
Independent Knitters	22	66	21	32.6 17.57	4.9 4.31	.51 .38	45.43 45.95
II. Total, >1 and ≤2 sweaters	45	101	33	34.1 14.81	6.4 4.16	1.95 .17	195.41 74.76
Piece Workers	21	34	11	31.4 15.5	5.2 2.66	2.00 .0	145.32 13.82
Independent Knitters	24	67	22	35.6 14.28	7.1 4.7	1.92 .21	217.81 81.09
III. Total, >2 and ≤3 sweaters	19	41	13	28.1 11.74	8.3 4.4	2.93 .10	286.72 82.14
IV. Total, >3 sweaters	16	24	8	31.6 14.43	5.0 3.13	4.02 .43	271.08 57.53

All Piece Workers	72	143	46	26.2 13.65	4.1 2.84	1.62 .74	112.28 82.60
All Independent Knitters	61	168	54	33.8 14.99	6.8 4.64	1.59 1.04	168.80 125.35
All Knitters*	133	311	100	30.3 1.30	5.5 .36	1.60 .03	142.82 5.27

* Approximate standard errors of means for total sample calculated using the formula for a stratified sample with six strata: piece workers and independents from levels I and II and total knitters from levels III and IV.

APPENDIX TABLE A.2

MEANS AND STANDARD DEVIATIONS FOR FAMILY SWEATER PRODUCTION
AND KNITTING INCOME BY MODE OF PRODUCTION
MIRA, ECUADOR, 1979

<u>Mode of Production</u>	<u>Sample</u>	<u>Estimated Population</u>		<u>Sweaters Per Week</u>	<u>Net Income Per Week</u>
		<u>n</u>	<u>N</u>	<u>%</u>	---- mean values -----
Piecework	30	68	36	2.86 2.33	200.75 162.47
Independent	31	104	56	2.27 2.72	243.27 376.68
Mixed Independent and Piecework	6	15	8	4.74 1.81	390.00 100.59
All Families	67	187	100	2.68 4.64	239.70 301.23