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Discussion Paper for a Workshop on the Role of the Informal Sector in Providing Housing and Infrastructure in Developing Countries, sponsored by the AID Office of Housing and Urban Programs, January 1988

SMALL-SCALE CONSTRUCTION METHODS, BUILDING MATERIALS, AND HOME-BASED ENTERPRISES IN THE INFORMAL SECTOR

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This paper is concerned with three activities: 1, informal sector construction; 2, indigenous and small-scale production of building materials; and 3, home-based informal income and employment generation. Should these activities be promoted by the Office of Housing and Urban Programs? To what extent can they be incorporated in the lending program? How do they fit in with technical assistance, training, institution building, and policy dialogues?

The view of small-scale "informal" activities as something positive, not marginal, not unproductive, not exploitative, and not the more temporary the better, only dates back to the early 1970s. Much research has been carried out since then, but little of the results can be directly related to housing and urban policies. If the focus of research on the informal sector was on its relation

to agricultural cycles, import substitution, education and the role of women -- all important topics -- the connection with building, housing finance, and location was most likely slighted. Policy implications for the Office of Housing and Urban Programs would not be obvious. This paper will review a few of the findings that have been relevant and will try to suggest what else needs to be learned to fit the informal sector effectively into assistance programs.

Introduction

Several possible types of intervention on behalf of informal builders, materials suppliers, and home-based enterprises have been identified in Amy Richwine's background paper, "Potential Areas of Intervention within the Informal Housing Sector" (Deloitte, Haskins, & Sells, August 1987). The objective is not rigidly to define and to support the informal sector *per se*, but only to find activities that fulfil the basic shelter needs of the poor and that incorporate these households in the development process. Some informal activities meet that test better than others, so the limited resources of both American and foreign governmental and financial institutions should be focused on them. The most supportable activities are the ones that generate the most shelter, employment, learning opportunities, and income.

One cannot sort through a myriad of informal activities for this goal one at a time but must sample selectively in accordance with a general framework and probe more deeply here and there. This framework will inevitably be different for the three areas covered in this paper, (1) construction methods, (2) materials and (3) home-based enterprises.

Construction methods and materials must be classified first as applying to infrastructure, the dwelling, maintenance, or improvements and expansions. It should be noted whether a change in materials entails substantial changes in design and construction methods or not. Whatever is more complex will usually be harder to execute and will be adopted more slowly.

Use of capital- or import-intensive methods may be due to a lack of alternatives, suggesting possible inventive effort. If a more appropriate technology has been invented but has not spread, the communication system needs to be examined. If a suitable method exists and seems widely known without adoption, the motivation and trust of builders and clients needs scrutiny. Outside interference with adoption is also possible. Is adoption blocked by threatened private competitors, by ill-advised government controls, or by sheer abuses of government power at some level? Since these factors vary from country to country,

even city to city, simple recipes for intervention are impossible.

In a similar way, home businesses must be cross-classified according to a variety of characteristics. The main divisions are according to general type of output -- manufactures, rental space, retail sales, or other services. No policy can follow from this division until one has further identified aspects of location, market, and type of operator. Businesses located in distant irregular settlements will have needs and opportunities different from those in densely occupied deteriorating inner city areas. In either case much depends on whether the potential market is mainly in the neighborhood or city-wide and for consumers or other businesses. Is there modern sector competition? Finally, is the business operated by the male head of the household, a spouse, a female head, or some other family member? Need for assistance and viability among countless home-based enterprises can be sorted out in a preliminary way with such categories, but one cannot assume that findings from one of the world's regions will apply equally in others.

In the discussion that follows we shall often use the terms "conventional" building materials and "small-scale" construction enterprises, instead of "traditional" and "informal." If an enterprise has few employees and uses little capital, it is relevant to the policy issues

addressed here even if it may be classified as modern or formal according to some criteria. The cement, concrete blocks, bricks, and other materials used by such enterprises are likely to be entirely conventional by now although they may not be "traditional" in the context of an ancient local culture. Finally, the small enterprises that use the dwelling as part of their capital and that contribute to housing upkeep may simply be classified as home-based without much concern for their degree of informality. That degree does not matter as much as their location.

I. Small-scale Construction Enterprises

Throughout the world the vast majority of construction firms have fewer than ten workers, usually only one or two. They are hired by their clients on the basis of personal contacts and trust, which usually means residents of the same or nearby neighborhoods in poor settlements. To avoid shoddy and unsafe construction, even poor households that do much building for themselves will hire such professional builders for critical operations. What is informal about construction is not so much the execution of work as the failure to comply with permits, licenses, deeds, labor legislation and related fees.

Even in the case of infrastructure provision, more authority and responsibility can often be transferred to the local level and thereby to lower cost and to improve upkeep.

As an example, one can take the Orangi Pilot Project in Karachi, Pakistan.

The Orangi Pilot Project

The Orangi project began in 1980 when Dr. Akhter Hameed Khan was asked to plan welfare work in this irregularly settled district of Karachi. Here some 800,000 people lived at a density of 200 per acre. Due to impermeable shale the water table had risen and septic tanks were water logged. Hence households were hooking up illegally to open drains and typhoid, dysentery, and other diseases were spreading. Cures cost $40 per child -- a monthly wage.

A sewer system was the only solution, but if municipally provided, its cost would be too high because of corruption in the Karachi Metropolitan Council, monopolistic collusion among contractors, high prices and low quality. Dr.Khan decided to remedy the situation informally by applying an Agricultural Extension Model of Organization that he had developed at Comilla, then East Pakistan, in cooperation with a Michigan State University Project.

Each household was treated as an independent enterprise that in cooperation with others would help to dig a sewer for its lane. From each lane two men were elected to manage both activities and money, all cash-down, collected in advance. Cost was $20 for new internal latrines and $12 for each household's share in extending pipes to the lane pipe

and the lane pipe to a secondary pipe that, in turn, would empty into a creek. Manholes were needed for every three or four houses. Not a perfect solution, but still a major improvement.

Within five years 400,000 persons had raised $1.6 million, and 1,600 lanes out of 3,050 had acquired sewers. If formal sector contractors had carried out the work, costs were estimated to be four times as high. At Orangi outside advisers gave no orders and did no improvement work themselves. They spent some $12,000 on research, including surveys and an improved manhole design. This design was a change from masonry to poured concrete that reduced costs from $20 to $2 per manhole and lowered construction time from two or three days to one or two hours.

Dr Khan has viewed the Orangi Pilot Project as partly a research and development institution. The staff could be made available to other cities to organize households in lanes and to teach managers who, in turn, could teach others. At one point Dutch, United Nations, and World Bank assistance was withheld from this unorthodox project that goes against a predilection for latrines and threatens a local political base for corruption. Nevertheless, given the high priority of households for preserving health and real estate values, as well as the resources thereby mobilized, the experiment would appear to merit serious study and possible replication at similar locations.

The informal sector and home improvement

In 1978 the writer was asked by the World Bank to determine what technical difficulties households might encounter in finding the skilled labor and materials for improving and expanding their dwellings after the provision of urban infrastructure. The matter was studied with a survey in Cartagena, Colombia (Strassmann 1982), and it appeared that such difficulties had been and most likely would continue to be minimal. The informal sector had the resilience to provide adequate construction services provided finance, tenure, and motivation were adequate. These findings were later confirmed by studies in six other countries (Strassmann 1984).

Those results do not mean that entrepreneurs could not improve their skills further and move into larger projects, as some do. Indeed the problem appears to be that skilled workers can go so far into transforming themselves into entrepreneurs and no further. Often they have the ambition but lack skills, capital, and opportunities in an interrelated, self-defeating fashion. The critical area that needs further study is not where entrepreneurs capable of building small dwellings and improvements come from, but how some of these turn into contractors capable of more ambitious projects. There is, of course, no basic advantage in remaining small and informal if that means low profits,

little access to credit, low productivity, and inability to raise quality.

Support for small firms

What keeps firms in the informal sector is the immediate cost of submitting to regulations. Yet needed support cannot be obtained without submitting to those costly controls. The support that is needed includes finance, contracts that assure a steady flow of work, training, and occasional help with procuring materials or equipment. Insofar as governments become the clients for small firms, they must provide efficient registration procedures, clear contract provisions, a stable working environment, and dependable payment schedules.

Space allows no more than a few cursory comments on these conditions. Construction is an industry with a production process that involves prompt expenditures but delayed payments, hence high risk for the producer. Unfortunately, high risk seems to encourage fraud, in effect, the substitution of one risk for another. Special institutions have been developed to reduce risks -- bridging loans and bonding, which however, depend on registration and all that entails. Unlike manufacturing, construction has a low collateral base, ironically -- few buildings and equipment with a life expectance of 5-7 years, compared with 15 years in manufacturing.

Another difficulty for registered firms on government work may be having to pay excessively high legal minimum wages or union rates when cheap labor is available at piece rates. A better way to encourage higher income for labor is to raise productivity by encouraging on-the-job training programs.

Contractor Development Agencies

Among those needing training is usually the small entrepreneur himself. He is likely to be deficient at procurement, scheduling, reading blueprints, and quality control. To help with these matters, Edmonds and Miles (1984) have recommended autonomous Contractor Development Agencies (CDAs) that builders should perceive as their agents vis-a-vis government clients. After an initial period such agencies should be able to charge sufficient fees to be self-sustaining. These agencies would provide assistance with the activities mentioned above, providing advice on tendering, planning, programming, speeding up procurement with official purchasing orders, rendering technical assistance, arranging financial support, and guaranteeing loans. The successes and failures of the Kenyan National Construction Corporation (NCC) should be studied in this connection. This agency was started as a joint venture with NORAD, the Norwegian aid agency, in 1967, attained a staff of 250 as it became fully Kenyanized, but

then encountered difficulties of various sorts. After studying fifteen years of NCC operations, one observer concluded that its achievements were not sufficiently significant "to dispel any general disquiet as to its methods and practical procedures" (Wells, 1986, p.122). A small number of African firms had obtained a tiny share of public construction contracts but remained incapable of competing with established Asian-owned firms. According to Wells (1986, p.123),

> The real problems confronting the construction sector of Kenya lay, not in contracting, but in ... severe shortages of skilled labor, inadequate supplies and high prices of locally-produced materials and components and a consequently heavy dependence on imported items, of both labor and materials. The situation clearly arose from a reluctance on the part of contractors, or others, to undertake long-term investment in the industry, whether it be investment in the training of local labor or for the production of materials.

II. Building Materials

Small-scale informal sector building firms do not have an automatic preference for materials that are indigenous

and produced informally. They use whatever is good enough or cheapest, whether new or old and discarded, whether imported or domestic, whether produced in large-scale modern factories or by ancient handicraft methods. In the formal sector professional designers will also specify what is safest and most convenient, but that is less likely to be an indigenous material that is novel or that was originally used in a different setting. Whether formal or informal, the Housing Guaranty Program has long sought to foster use of indigenous materials, appropriate technologies, and innovative site designs.

The nature of building materials appropriate for developing countries has been the subject of a large number of specific reports and two major conferences, the First Consultation on the Building Materials Industry, sponsored by UNCHS and UNIDO in Athens, March 25-30, 1986, and MTEC-86, sponsored by the CSTB, Plan Construction, and the Ecole Nationale des Ponts et Chaussees in Paris, December 9-11, 1986. The best book surveying the field is probably R.J.S.Spence and D.J.Cook, Building Materials in Developing Countries (New York: John Wiley, 1983).

At Michigan State University we have had a small-scale enterprise research project since the early 1970s. With A.I.D. and World Bank support we have made extensive surveys of such enterprises in perhaps a dozen Asian, African, and Latin American countries. Thousands of enterprises have

been surveyed not just once, but on a panel basis, week after week, the same ones for about a year.

Small versus large firms

The objective has been to determine if the small informal ones are viable compared with large modern ones. It is not always the case, but it is true far more often than not -- even when the small firms are penalized on credit and imports. Among the small firms, we have found building materials makers especially viable. Again, not in all, but in most branches. Given a chance to respond to changing prices, such entrepreneurs will on their own make a myriad of small changes that economize on inputs although no one change would strike an outsider as especially significant. A.I.D. can help to promote policy changes that will give them that chance and it can further their adaptations with strategic but unobtrusive technical assistance.

The central issue in choosing to support small and informal versus large-scale building materials producers is the volume at which production costs (for given quality) will be at a minimum. At what point will economies of scale be exhausted? Economists have usually posed this question in terms of whether or not the cost curves are U-shaped or L-shaped. After a certain point do costs rise again or do they reach a minimum? If they are L-shaped, the size

distribution of firms beyond the minimum efficient scale will be random. If they are U-shaped, favoring small firms, monopolistic collusion, barriers to entry, and other privileges for large firms should be identified and eliminated.

Large firms have an advantage in capital-intensive processes and in fully using specialized workers and equipment, not only in production but also in sales promotion and accounting. On the other hand, coordination problems within a bureaucratic hierarchy do not hamper the flexibility of small firms. For materials like structural steel, cement, flat glass, wire, and asphalt, the minimum scale is beyond the reach of small enterprises. The same cannot be said for bricks, concrete blocks, floor tiles, plumbing fittings, window and door sashes, grills, and a long list of other products.

The variety of interesting cases that illustrate the adaptability of small enterprises is endless, and only a few will be mentioned here. One is a producer of faucets in Bangladesh who subcontracted casting to one firm, grinding to another, and plating to a third. He did the finishing himself. All the firms were tiny and located in the commercial district of Dacca. They had the capital- and organization-saving advantages of the small.

In a study of two Egyptian governorates, Fayoum and Kalyubiya, an MSU project found 1,074 enterprises making windows with an average of 1.8 workers per enterprise. Some 1,774 enterprises made tiles, bricks, and other non-metallic mineral products, employing 3.15 workers per firm. Out of 137,000 small-scale workers (less than 50 employees per firm) 5.5 percent made building materials.

Egyptian floor tile makers

Cement floor tile makers were selected for closer study. Twenty-One firms were selected at random and interviewed with a detailed questionnaire once or twice a week for an entire year, 1981-82. Average employment per firm in Fayoum was 4.2 workers, with 3.1 hired from outside the owner's family. Most were trained on the job and paid according to time spent, not piece rates, but 34 cents per hour. Replacement cost of equipment was $2,845 and inventories were worth $1,405. That indicates the level of loans that may be needed for such firms, but for analytical purposes figures have to be converted to a flow basis, meaning $370 in capital charges per year, $2,300 in hired labor, and $7,000 in materials.

If total costs, $9,670, are subtracted from total sales, $13,900, we have the return to the owner, $4,230 per

year or 30.4 percent of turnover, an amount almost equal to the value of capital and inventories. This rate of return made tile making more profitable than the other fourteen small-scale industries that were studied. In Fayoum the net rate of return per family work hour was $4.00, and in Kalyubiya it was $5.15.

A problem with this industry was the subsidizing of cement in Egypt and allocating it in accordance with the productive capacity of firms as measured by machinery installed. This arrangement was inequitable for small producers and gave them an improper incentive to mechanize.

According to the Egyptian survey, channels of credit to the enterprises could be improved since a shortage of working capital was frequently mentioned. A shortage of skilled labor was also noted, and it appeared that the best way to correct that would not be through vocational training programs, but through subsidizing part of the wages of apprentices working in on-the-job settings. On the other hand, some perceived problems with capital and labor actually reflected poor management practices [Seale 1984].

Must the informal sector produce for the poor?

Another study of the MSU Small Enterprise Project took place in Thailand. Here we found that the building materials making firms were either much above or below

average. Good quality cement blocks gave a return much above the average, the highest of all industries. On the other hand, if any return is ascribed to capital at all, brick-making in small village kilns was a losing operation. In garments and furniture, the same pattern was observed: Small-scale production of high quality goods gave a substantially higher rate of return than production of cheap goods for the lower end of the market. An implication is that the promotion of small-scale building materials should be not only for low-cost, informal sector housing. An attempt should be made to reach middle and upper income housing and commercial construction. If a system of subcontracting is wisely promoted, such an expansion of the market should be feasible.

These observations are reinforced by findings on the characteristics of innovations as reported in the technical literature [McConnaughey and Strassmann, 1979]. Innovations aimed at the poor have had particular difficulties. In Peru, for example, a system of redesigned but cheaper plumbing fixtures were rejected by poor self-help builders in favor of traditional designs.

Policy recommendations for small-scale materials production

1. Technological support should concentrate on improving quality flaws in production of fairly conventional building materials and components. Standards are crucial for

promoting wider use of anything unfamiliar because they inspire confidence and make specification outside of the informal sector possible. That sector often copies what is officially permitted.

2. Training should be supported in the context of the small enterprises themselves, rather than exclusively in formal schools [King, 1977]. Building research institutes should go beyond laboratory research and put more effort into studying production techniques and organizing vigorous extension programs. They should supply drawings, designs, financial data, technical guidance, and supervision apart from the training and standardization already mentioned.

3. Demand studies are in order. It is a mistake to equate the small-scale with income-inelastic, inferior commodities.

4. Public agencies can facilitate small-scale production of building materials for dwellings by specifying them for public construction. A system of subcontracting and flexible but continuous specification is needed. Opponents of intermediate building materials may exist at all levels of government and should be identified as such and be

converted to allowing the more economical methods [Fathy 1973].

5. Low-cost channels of credit are particularly important, here as with small contractors and home-based enterprises. The delivery system must not be too cumbersome and bureaucratic. Let credit ratings be established by extending very small loans for quite short periods and gradually extending them to larger loans for longer periods.

6. Demand for materials is as much subject to drastic fluctuations as any other part of the construction sector. Small percentage rises in the stock of structures may require multiple expansion of annual materials production. Small percentage declines elsewhere can mean collapse of the materials market. Development of the sector means sharing these risks with the rest of the economy.

III. Home-based Enterprises

Until the Industrial Revolution, dwellings were used for economic production in virtually every culture in all ages. Attempts to impose separate residential and commercial zoning on developing countries has been a widespread and counterproductive imported constraint that fortunately has rarely had more than limited success. Such attempts should not only be avoided, however, but instead

they should be reversed. Urban policies should foster any productive use of the housing stock.

Among a minority of observers, Michael Lipton (1980) has gone furthest in stressing that home-based, family-operated enterprises are qualitatively different and the core of the informal sector. Especially important is the ease of shifting labor, funds, equipment, materials and space from one use to another, even from market production to family growth, to housing repair and expansion. The formal sector may generate more capital formation and technological change through economies of scale, but it is hampered by rigidities in the face of unexpected economic change. Suzanne Berger and Michael Piore (1980) have pointed out that even in industrialilzed countries (notably France and Italy) an urban home enterprise sector has a major function as a cushion against a variety of shocks. The sector is not disappearing because it is needed and viable as it is.

Findings from Lusaka, Lima, Colombo, and Kalutara

To learn more about home-based enterprises, the Agency for International Development awarded a contract to Michigan State University. We made a preliminary survey in Lusaka, Zambia, in 1979, followed by others in Lima, Peru, in 1980 and 1983, and in Colombo and Kalutara, Sri Lanka, in 1981 and 1983. We asked whether or not the enterprises were productive, perceived as desirable by their operators, and

sensitive to the use of space. What was their share of employment and their contribution to urban household income? Was their share declining but so slowly that actually the number of enterprises was proliferating? How was the changing composition of such enterprises related to their competitiveness with the modern sector in terms of flexibility, use of space, and location?

The answers to those questions cannot be repeated in detail here (See Strassmann 1985, 1986 and 1987 and nine tables attached to this paper.). Anywhere from a tenth to a quarter of households had home enterprises. Their workers earned about half as much as they seemed to be able to earn on the outside, but this comparison needs more systematic study. Whatever the differential might be, the majority of workers seemed to accept it as reasonable. For one thing, working at home saved one to three hours of urban travel time. Enterprises that sold only in the neighborhood ("this and nearby streets") earned much less than those that sold city-wide or to businesses. Neighborhood selling enterprises were mainly stores and snack bars run by women. Women were also conspicuous in home-based food, textile, and clothing workshops, but earned only a third as much in Lima as men might earn in the same types of activities. Multiple regression analysis supported the notion that, for predicting income, where and to whom a home-based enterprise sells, as well as which family member runs it, is at least as important as the actual service or good offered.

Allowing for these factors can reverse the rank order of profitability.

A large percentage of home business operators said that the business could not exist without the space provided by the dwelling, and that the dwelling would be unaffordable without the home business. Even rented dwellings often contained home businesses in Lima. In that city AID funds were lent to some home-based enterprises through the Banco Industrial del Peru (BIP), about half to manufacturing enterprises and half to service providers, mostly stores and restaurants. Apart from having extra space and higher profits, these enterprises seemed to be no different from other small businesses. Whether this difference was a cause or effect of BIP loans is not clear, but a loan-space-profits sequence seems most plausible.

Renting

The easiest use of extra space is renting it to others. Some households and small businesses without much capital can nevertheless pay the annual (or opportunity-) cost of an accommodation, and others may temporarily find themselves with space that they are willing to rent out. A new couple without children may wish to acquire a dwelling that is somewhat too large, and a couple with grown children may be in the same position. Acquiring extra space could also be a household's best opportunity for investing savings. Without being at all wealthy, such households might still not be

among the poorer half of income recipients and thus qualified for A.I.D. support. Moreover, they cannot practically be forced to rent to tenants below some income level, much less to evict them if incomes rise above some level. Nevertheless, rentals are an important, possibly growing share, of both the formal and the informal housing stock. An optimal housing policy will not neglect the proper development of rental housing, in part, because for some poor households rentals are indeed optimal.

In general, programs of A.I.D., the World Bank, U.N.C.H.S., and national housing agencies have not stressed rental housing. Since some funds lent to the National Housing Institute of Portugal have supported rental housing, the RHUDO for the Near East and Africa has included revision of rent controls as a policy objective for that country. No doubt, a certain deep prejudice against landlords exists in many countries, just as prejudice exists against any private operation in other parts of economies. For example, land developers are easily labeled as "speculators," hence infamous. The Annual Report, Fiscal 1986 of the Office of Housing and Urban Programs has considered it a "breakthrough" that private land developers have at last been included in loans for low-cost housing in Tunisia. If providing serviced land through the market is socially acceptable, worthy of indirect support, why not housing in flexible rental form?

Grants and loans

To stimulate small-scale entrepreneurship, a competitive program of awarding very small grants, rather than loans with greater administrative costs, might be considered, after close study of experience with the Inner Kingston Development Project. Of course, loans and repayment are inherently better; and through simplification, much can be done to reduce their cost. Obtaining working capital is often the greatest difficulty for small enterprises. What should be explored with new research are the possibilities for joint loans, partly for construction and partly for promoting an enterprise. Since income from the enterprise will in part be used to repay the construction loan, the rationale for such combined lending would appear to be obvious. In practice, of course, several obstacles need to be cleared if such loans are not to heighten risk of default for the lender and risk of eviction for the borrower. (See Tables 6-8, attached.)

Problems and opportunities in the informal sector and specifically among home-based enterprises are not easily specified and tested because informality means lack of registration and enumeration. These difficulties have been brought out in every symposium on the sector, including perhaps the Conference on the Informal Sector held in Brazil under the Office of Housing-sponsored Latin American

Training Center. Also worth exploring further is the informal sector initiative and the development of other productive facilities in connection with the Small Towns Project of Kenya. The best survey of informal sector manufacturing studies that I have seen is by Moser and Marsie-Hazen (1984). Sympathetic studies of rental housing are only beginning to appear, for example, Edwards (1982).

CONCLUSION

The principal theme of this paper is that concern for employment, income, housing, and urban development go together. If roads, drainage systems, water lines, and sewer systems are not extended to new areas, urban density will rise, raising the price per square meter of land, and beyond a certain point, making capital-intensive building methods viable. As living space shrinks and rises in cost, home businesses become less feasible and output and employment will be hurt, especially in urban locations with potentially the best access to markets and supplies. Home businesses need not only legal support, credit, and well-aimed training programs, but cheap space and good access through the timely provision of urban infrastructure.

Eventually -- after decades or perhaps a century -- small producers in most developing countries will be wholly displaced in some activities and partly in others. In a growing economy, however, partial displacement is not

inconsistent with growth in absolute numbers. Small enterprise activities will simply grow at a lower rate than large-scale production. Even in the United States and Europe small scale enterprises with conspicuous informal characteristics -- home-based and evading regulations -- are still proliferating.

The irony is this: By ignoring, not supporting or worse, discriminating against small enterprises, countries will have them longer. They are exactly like agriculture in this respect -- their predominance is partly a symptom of poverty. To phase the informal sector out relatively, it must be supported as the best current way of producing not only shelter but of raising incomes, widening the market, and encouraging capital formation -- all prerequisites for eventually making modern, capital-intensive, high-wage construction and manufacturing viable.

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Table 1. The Role of Home-based Enterprises in Income and Employment Generation in Colombo and Kalutara, Sri Lanka, and in the Metropolitan Area of Lima, Peru

	Colombo Metropolitan Area, Sri Lanka (1981)	Kalutara, Sri Lanka (1983)	Lima Metropolitan Area, Peru (1983)
1. Population	1,434,000	31,500	5,258,000
2. Household annual income per capita, US dollars[1]	$164	$170	$376
3. Share of households with a business in the dwelling or on the site, percentage of all households	17.0	12.3	10.8
4. Home business workers per household with one or more such businesses	2.8	2.2	1.4
5. Urban employment share of home businesses, percent	28.0	16.2	7.4
6. Urban household income share that is generated by home businesses, percent	12.5	9.2	4.5
7. Income per home business worker as a percentage of income of other workers[2]	36.7	52.4	52.6
8. Share of household income that is generated by the home business(es) for the households that have one or more, percent	54.0	45.8	39.9
9. Sample size of the home business survey	154	131	1,706

Sources: Surveys described in Note 2 and national census data projected to the dates of surveys.

Note: [1]US $1.00 = 20.15 Rupees, 1981; 25.00 Rupees, 2,000 Soles, 1983.

2 Over ninety percent of HBE workers said they were not part time but worked "usually or always" in the HBE.

Table 2. Mutual Dependence of Dwellings and Home-based Enterprises on One Another, Lima, Kalutara, and Colombo

City (year)	Percent of Respondents: Need dwelling to operate enterprise	Percent of Respondents: Need home enterprise to afford dwelling	Sample Size
Lima (1983)	70	68	1,706
Kalutara (1983)	69	53	131
Colombo (1981)	75	44	154

Table 3. Characteristics of Dwellings with a Home-based Enterprise (HBE) Compared with Others (None Works at Home), Lima, Peru, 1980

	Total Sample[a]		Conventional, Standard, Residential Areas		Popular Urbanizations and Pueblos Jovenes	
	With HBE	Without	With HBE	Without	With HBE	Without
1. Sample Size	132	1,035	51	468	65	441
2. Percent	11.3	88.7	9.8	90.2	12.8	87.2
3. Household Income, Monthly [US$ 1980]	226	236	286	304	188	169
4. Years at Site	13.6	10.7	14.6	11.0	13.1	9.6
5. Owners, Sample Size	95	710	30	260	60	397
6. Value [US$ 1980]	8,119	9,360	12,553	17,056	6,019	4,513
7. Tenants, Sample Size	29	312	19	202	3	39
8. Rent [US$ 1980]	14.5	15.6	11.6	18.4	12.5	12.2
9. Site, Area, m^2	144.9	148.9	122.2	145.9	175.7	158.0
10. Floorspace, m^2	114.7	103.2	121.2	121.0	119.9	92.1
11. Number of Rooms	3.56	3.50	3.82	3.93	3.46	3.20
12. Rooms Added	.81	.73	.63	.35	1.12	1.30
13. Sewerage System Connection, %	60.6	62.7	66.7	79.3	56.9	46.0

Note: [a]The total sample included 26 enterprises in quintas, callejones, corralones, and rancheria. HBEs providing lodging are excluded.

Source: Sample of 1,167 households, July 10 - July 3, 1980, carried out by the Office of Technical Manpower Studies of the Ministry of Labor of Peru and MSU.

Table 4. The Relative Productivity of Home Workers

	1. Home business income, $	2. Home business workers	3. Income per worker (1÷2), $	4. Ratio to B4, 5, or 6	n=
I. Food products, textiles, clothing					
A. Female operated					
1. Market in neighborhood	33.1	1.10	30.1	.50 (B4)	103
2. City-wide market	52.0	1.23	42.3	.54 (B5)	137
3. Sell to businesses	77.4	1.58	49.0	.71 (B6)	25
B. Male operated					
4. Market in neighborhood	112.4	1.88	59.8	1.00	20
5. City-wide market	166.5	2.11	78.9	1.00	30
6. Sell to businesses	106.2	1.54	69.0	1.00	15
II. Leather, wood, and metal products					
7. Market in neighborhood	73.5	12.9	56.7	.95 (B4)	29
8. City-wide market	128.7	2.04	63.1	.80 (B5)	39
9. Sell to businesses	111.0	2.00	55.5	.80 (B6)	24
III. Other manufacturing					
10. Market in neighborhood	24.4	3.25	7.5	.13 (B4)	12
11. City-wide market	57.3	1.25	45.8	.58 (B5)	25
12. Sell to businesses	128.7	1.78	72.3	1.05 (B6)	11
IV. Retail trade, restaurants, bars					
13. Market in neighborhood	58.4	1.39	42.0	.70 (B4)	754
14. City-wide market	151.8	1.54	98.3	1.25 (B5)	144
V. Other services					
15. Repairs	104.2	1.64	63.5	.80 (B5)	59
16. Medical services for neighborhood	23.8	1.00	23.8	.40 (B4)	56
17. City-wide medical services	76.7	1.17	65.6	.83 (B5)	14
18. Laundries and cleaning	32.5	1.23	26.4	.44 (B4)	23
19. Lodging	52.8	1.22	43.5	.73 (B4)	71
20. Miscellaneous	62.7	1.06	59.2	.75 (B5)	112
Weighted Average	70.3	1.40	50.2		

Source: Survey of 1,706 home businesses, October 27 - December 10, 1983

Table 5. Attitudes and Plans with Respect to the Home Business By Its Operator

	(1) Could not afford this dwelling without the home business, percent	(2) The home business would not exist without this dwelling, percent	(3) Percent saying a home business is "much better" than a formal sector job	(4) Formal sector job would take 3 more hours daily or more including travel	(5) To change, formal sector wages would have to be "much more"	(6) Not thinking of moving business from dwelling	(7) Thinking of closing the business
I. Food products, textiles, clothing							
A. Female operated							
1. Market in neighborhood	59.6	75.7	48.1	41.5	66.7	96.0	9.0
2. City-wide market	45.1	75.2	55.6	44.7	80.8	93.5	15.0
3. Sell to business	78.4	81.8	69.9	26.7	53.5	90.0	0.0
B. Male operated							
4. Market in neighborhood	75.7	57.1	59.3	61.2	69.4	100.0	4.1
5. City-wide market	100.0	56.1	41.3	39.8	67.2	87.7	2.8
6. Sell to businesses	100.0	45.8	45.8	34.4	94.3	71.4	0.0
II. Leather, wood, and metal products							
7. Market in neighborhood	70.2	63.2	50.8	58.1	65.6	94.1	5.9
8. City-wide market	89.2	32.8	61.2	43.8	64.6	95.6	2.2
9. Sell to businesses	77.7	43.1	72.3	41.5	79.2	93.1	12.0
III. Other manufacturing							
10. Market in neighborhood	21.3	68.4	28.4	36.8	60.0	100.0	0.0
11. City-wide market	50.1	55.0	55.0	46.5	74.9	91.7	23.2
12. Sell to businesses	59.5	66.9	62.8	40.5	55.4	100.0	7.4
IV. Retail trade, restaurants, bars							
13. Market in neighborhood	70.5	78.2	54.2	38.7	70.4	95.3	9.9
14. City-wide market	79.7	53.3	48.4	46.6	68.4	93.7	11.1
V. Other services							
15. Repairs	80.5	45.0	58.2	45.3	78.8	98.6	12.9
16. Medical for neighborhood	35.9	85.0	39.6	51.4	82.2	98.5	11.4
17. City-wide medical	81.6	11.6	17.3	62.7	47.4	38.4	5.8
18. Laundries and cleaning	73.3	71.3	30.3	57.0	71.3	100.0	16.0
19. Lodging	55.6	81.7	56.8	42.9	63.5	----	43.5
20. Miscellaneous	68.4	71.1	60.2	47.6	70.6	86.2	16.9
TOTAL	67.9	70.3	53.0	42.5	71.0	94.3	10.6

Source: Survey of 1,706 home businesses, October 27 - December 10, 1983.

Table 6. Importance of Credit and Credit Terms

	(1) Credit is necessary	(2) Credit mainly from formal sources	(3) Interest rate, expected to pay, %	(4) Unwilling to accept such terms	(5) Unwilling to obtain joint loan with other neighborhood businesses
I. Food products, textiles, clothing					
A. Female operated					
1. Markets in neighborhood	63.0	4.4	37.5	11.6	52.6
2. City-wide market	73.0	14.1	35.9	10.6	58.6
3. Sell to businesses	73.3	3.3	35.9	10.0	48.3
B. Male operated					
4. Market in neighborhood	65.3	30.6	66.3	14.2	61.2
5. City-wide market	86.2	11.1	60.2	17.8	62.9
6. Sell to businesses	88.5	19.8	63.2	11.8	59.9
II. Leather, wood, and metal products					
7. Market in neighborhood	64.5	2.9	57.2	45.5	71.3
8. City-wide market	71.8	13.9	50.6	13.3	72.2
9. Sell to businesses	70.8	20.8	57.3	10.4	41.5
III. Other manufacturing					
10. Market in neighborhood	85.8	0	50.6	14.2	28.4
11. City-wide market	78.3	10.1	42.7	11.6	66.7
12. Sell to businesses	66.9	0	26.0	18.3	70.3
IV. Retail trade, restaurants, bars					
13. Market in neighborhood	62.6	7.6	42.0	23.5	69.0
14. City-wide market	47.9	5.5	51.3	26.4	62.2
V. Other services					
15. Repairs	67.6	7.6	47.0	18.7	56.8
16. Medical for neighborhood	48.6	8.2	37.4	21.1	59.2
17. City-wide medical	55.8	5.8	19.3	5.8	47.4
18. Laundries and cleaning	57.0	0	35.3	17.9	69.7
19. Lodging	59.9	9.5	48.1	32.3	66.1
20. Miscellaneous	57.3	10.9	40.0	26.1	71.5
Average	63.0	8.5	43.2	21.1	64.6

Source: Survey of 1,706 home businesses, October 27 - December 10, 1983.

Table 7. Main Source of Credit of Home Businesses -- Percentage Distribution

	(1) Relatives	(2) Friends	(3) Informal credit club	(4) Money lender, pawnbroker	(5) Banco Industrial del Peru	(6) Other banks	(7) Others
I. Food products, textiles, clothing							
A. Female operated							
1. Market in neighborhood	65.1	10.5	4.8	5.6	0.8	3.6	9.6
2. City-wide market	41.2	10.5	9.2	8.2	2.1	12.0	16.8
3. Sell to businesses	56.8	8.2	0	10.0	0	3.3	21.6
B. Male operated							
4. Market in neighborhood	48.9	8.2	4.1	0	12.3	18.3	8.2
5. City-wide market	35.6	20.6	0	21.8	8.3	2.8	11.0
6. Sell to businesses	34.4	17.2	11.5	11.5	0	19.8	5.7
II. Leather, wood, and metal products							
7. Market in neighborhood	45.9	24.8	0	2.9	0	2.9	23.5
8. City-wide market	27.8	38.0	0	4.3	11.7	2.2	16.0
9. Sell to businesses	41.5	15.4	0	8.5	17.3	3.5	13.8
III. Other manufacturing							
10. Market in neighborhood	57.5	14.2	0	7.1	0	0	21.3
11. City-wide market	53.2	15.0	0	18.3	6.7	3.4	3.4
12. Sell to businesses	77.7	14.9	7.4	0	0	0	0.0
IV. Retail trade, restaurants, bars							
13. Market in neighborhood	53.4	13.2	4.5	4.3	1.3	6.3	16.9
14. City-wide market	54.9	17.5	6.0	2.9	1.2	4.3	13.2
V. Other Services							
15. Repairs	50.2	21.9	7.0	1.4	3.4	4.2	11.8
16. Medical for neighborhood	58.4	16.3	3.0	5.2	0	8.2	9.0
17. City-wide medical	44.2	11.6	0	11.6	0	5.8	26.9
18. Laundries and cleaning	60.6	17.9	7.2	3.6	0	0	10.7
19. Lodging	46.0	16.6	2.5	9.9	0	9.5	15.5
20. Miscellaneous	49.0	17.5	3.7	4.6	3.9	7.0	12.1
Total	51.6	14.9	4.5	5.5	2.2	6.3	14.6

Source: Survey of 1,706 home businesses, October 27 - December 10, 1983.

Table 8. Collateral or Guarantee of Repayment Offered -- Percentage Distribution

	(1) The dwelling	(2) Equipment or Furniture	(3) Counter-signature of a non-family member	(4) Payroll deduction of a family member	(5) Other guarantees	(6) Nothing	(7) n=
I. Food products, textiles, clothing							
A. Female operated							
1. Market in neighborhood	21.2	26.2	10.6	19.6	2.4	22.2	103
2. City-wide market	14.4	33.4	11.3	25.4	2.7	12.1	139
3. Sell to businesses	20.1	36.8	0.0	16.7	16.4	10.1	25
B. Male operated							
4. Market in neighborhood	38.8	26.5	0.0	26.5	0.0	8.2	20
5. City-wide market	26.1	45.1	2.8	15.0	0.0	11.0	30
6. Sell to businesses	5.7	40.1	0.0	34.4	0.0	19.8	15
II. Leather, wood, and metal products							
7. Market in neighborhood	28.7	29.3	0.0	23.0	6.3	12.8	29
8. City-wide market	25.8	27.8	2.2	21.3	4.3	18.6	39
9. Sell to businesses	20.8	39.6	3.5	22.3	3.5	10.4	24
III. Other manufacturing							
10. Market in neighborhood	17.4	54.2	7.1	21.3	0.0	0.0	1.2
11. City-wide market	13.5	30.0	16.5	26.6	6.7	6.7	25
12. Sell to businesses	7.4	29.7	14.9	22.3	0.0	25.7	11
IV. Retail trade, restaurants, bars							
13. Market in neighborhood	32.3	16.9	3.7	16.1	3.5	27.5	754
14. City-wide market	17.8	29.8	3.4	14.0	5.5	29.5	144
V. Other services							
15. Repairs	28.7	28.2	0.0	22.3	9.7	11.2	59
16. Medical for neighborhood	26.7	15.6	15.2	22.3	3.0	17.1	56
17.. City-wide medical	41.6	14.2	18.4	5.8	0.0	20.0	14
18. Laundries and cleaning	14.3	25.1	0.0	10.7	3.6	42.7	23
19. Lodging	38.0	20.9	2.5	11.8	4.3	22.6	67
20. Miscellaneous	24.8	29.4	2.1	8.9	3.9	28.8	116
TOTAL	26.8	23.8	4.8	17.3	3.9	23.2	1706

Source: Survey of 1,706 home businesses, October 27 - December 10, 1983.

Table 9. Education and Need for Extra Training of Home Business Operators

	(1) Years of education completed by business operator	(2) Percent of operators willing to pay a reasonable fee for extra training	(3) Amount of time willing to spend on a training course			(4) Need for training before expansion	
			a. number of weeks	b. hours per week	c. total hours	a. Main need (%)	b. A need (%)
Food products, textiles, clothing							
A. Female operated							
1. Market in neighborhood	7.3	64.2	9.83	5.04	49.5	6.8	24.8
2. City-wide market	8.9	64.5	8.38	5.14	43.1	4.0	25.9
3. Sell to businesses	8.4	61.7	7.58	3.98	30.2	0	16.7
B. Male operated							
4. Market in neighborhood	7.3	40.7	3.66	2.89	10.6	4.1	16.4
5. City-wide market	6.6	50.6	6.49	4.73	31.1	2.8	11.0
6. Sell to businesses	7.8	45.8	5.90	4.07	24.0	0	5.7
Leather, wood, and metal products							
7. Market in neighborhood	6.0	52.2	7.18	2.62	18.8	3.0	17.7
8. City-wide market	6.3	43.8	4.01	2.93	11.7	0	21.8
9. Sell to businesses	7.6	56.9	5.63	3.81	21.5	3.5	17.3
Other manufacturing							
10. Market in neighborhood	9.9	71.6	7.46	5.25	39.2	0	49.0
11. City-wide market	9.7	76.5	10.63	3.05	32.4	0	33.3
12. Sell to businesses	8.5	48.0	2.83	2.19	6.2	0	7.4
Retail trade, restaurants, bars							
13. Market in neighborhood	6.1	18.3	1.00	1.20	1.9	0.2	5.3
14. City-wide market	5.9	16.4	1.31	1.36	1.8	0.6	6.9
Other services							
15. Repairs	8.3	37.1	6.61	3.65	24.1	1.4	15.7
16. Medical for neighborhood	11.0	53.1	8.89	4.40	39.1	9.7	22.3
17. City-wide medical	14.1	68.4	17.56	7.05	123.8	5.8	24.2
18. Laundries and cleaning	3.7	8.8	.55	1.03	0.6	0.0	0.0
19. Lodging	5.1	---	---	---	---	---	---
20. Miscellaneous	6.3	48.4	5.12	2.25	11.5	6.1	24.8
Weighted Average	6.8	33.6	3.98	2.35	9.4	1.9	12.7

Source: Survey of 1,706 home businesses, October 27 - December 10, 1983.