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WORKING CAPITAL, RURAL NONFARM FIRMS
AND RURAL FINANCIAL MARKETS

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ABSTRACT

Although rural non-farm activities are an important component of the rural economy, they have generally been overlooked by those examining rural financial markets. Yet, the fungibility of finance, particularly for working capital, insures that they are an integral part of the relevant terrain. The relationship of these activities to the rural household are examined; quantitative benchmarks of rural non-farm enterprises, particularly those engaged in manufacturing, and their use of working capital are presented. A demand and supply analysis of working capital with reference to rural manufacturing is developed and the results of econometric tests of several emerging hypotheses are reported for Sierra Leone. Several policy recommendations for strengthening rural financial markets are provided.

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I. INTRODUCTION

Research on rural financial markets has largely ignored the nonfarm sector. The 1973 AID Spring Review of Small Farmer Credit represented an ambitious attempt to summarize theory and empirical evidence regarding rural finance. Yet the nonfarm sector does not appear in the theoretical framework of the Analytical Papers and is only rarely mentioned in any of the Country Papers. Even today, eight years later, only a few articles and reports can be found on some aspect of finance for the rural nonfarm sector.

Just how significant is the rural nonfarm sector? Recent data assembled by Chuta and Liedholm (1979) for ten low-income countries reveals that 30 to 50 percent of the rural labor force, including both part-time and full-time workers, is engaged in non-farm activities. These include manufacturing, processing, repair, construction, trade, transport and services. The first three activities, which are the principal foci of this paper, account for 22 to 46 percent of rural non-farm employment. As a source of income and as an integral component in the mechanism of agricultural development, the nonfarm sector clearly merits more attention than it has so far received.

Of this very important segment of the rural economy, only marketing and certain processing industries (e.g., rice milling) have received scrutiny from agricultural economists. How efficiently the nonfarm sector operates and the constraints to its more rapid development are not long-standing questions. This neglect holds even in the much researched area of rural capital markets, where the fungibility of finance insures that non-farm activities are an integral part of the terrain being studied; yet, for lack of a comprehensive set of household accounts, these activities usually remain invisible to the researcher.

There are several reasons why the provision of working capital to the rural small enterprise may be important. First, in nearly every entrepreneurial survey a shortage of working capital is given as the first or second most pressing problem.¹ Second, private capital markets have generally not served this sector owing to an absence of collateral and high information costs. While public lending programs, concerned with launching relatively large "modern" enterprises, have in part filled this gap for long-term capital, there are very few schemes that provide short-term finance. Third, working capital appears to be a relatively larger component of total capital for smaller enterprises than for larger ones.² Fourth, the prospects for an efficient lending operation should be better for short-term credit because of short gestation and quick turnover, both of which imply a more rapid learning process for the lender. Finally, lender risks should be lower inasmuch as working capital loans are self-liquidating when geared to actual or prospective production orders.

This paper summarizes the results of some recent research on rural non-farm enterprises. Section II considers the relationship of non-farm activities to the rural household, provides some quantitative benchmarks and relates these to the problem of providing external finance. Sections III to V develop a demand and supply analysis of working capital with reference to

¹In Haiti, for example, lack of working capital was the most important problem perceived by the entrepreneurs (Haggblade). In Jamaica, lack of cash was the second most important constraint mentioned by entrepreneurs (Fisseha and Davies). Lack of working capital was also the second most frequently mentioned problem of rural entrepreneurs in Pakistan and was "critical only for the small firms" (Child and Kaneda).

²In the U.S., for example, the working capital to fixed capital ratio declines from 2.0 for small to 1.33 for large manufacturing enterprises (U.S. Government).

rural manufacturing activities; the results of an econometric test of these hypotheses are reported for Sierra Leone in Section VI. The concluding section focuses on the policy measures required to strengthen capital markets so that they may better serve the financing needs of the non-farm sector.

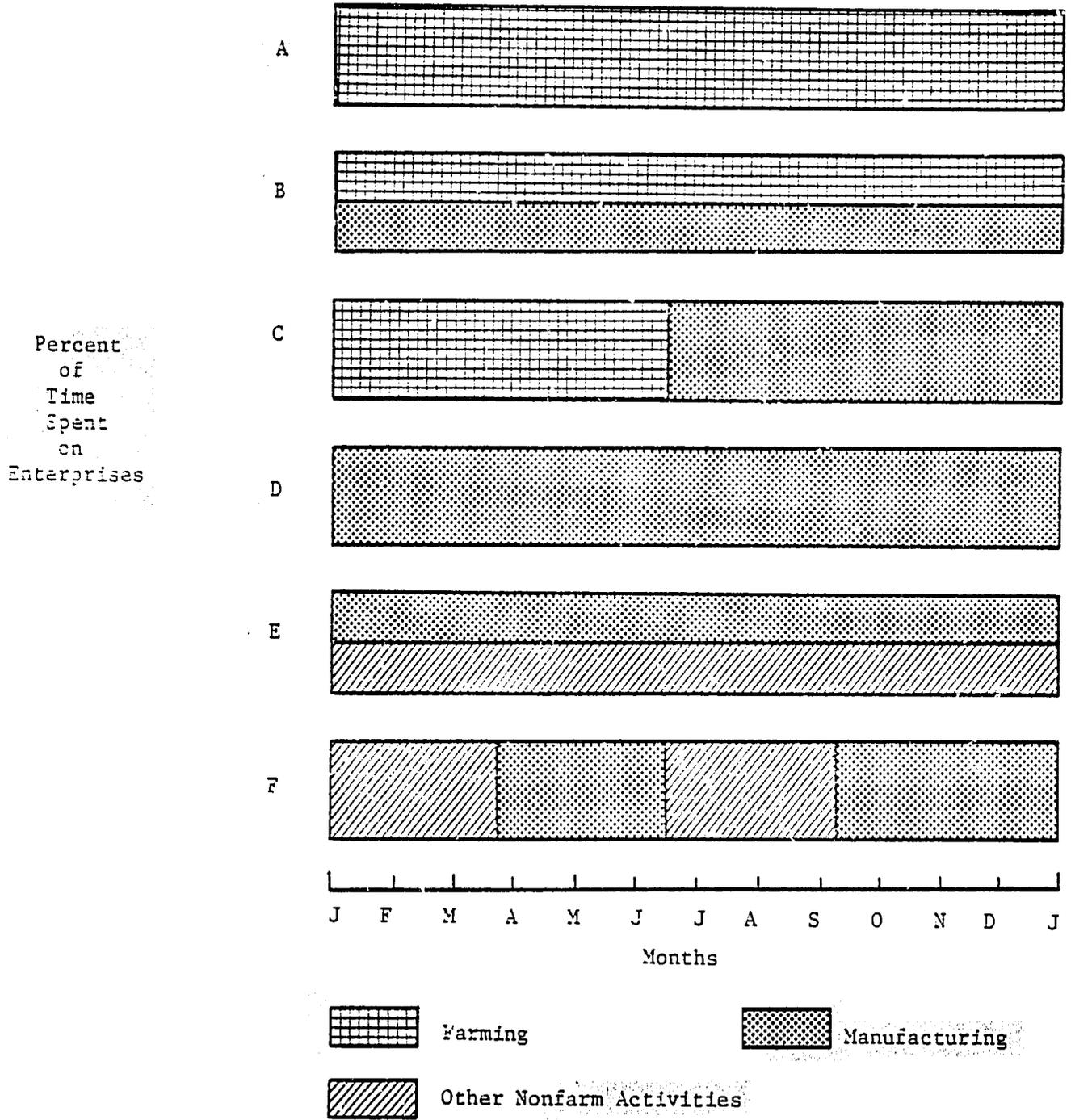
II. NON-FARM ENTERPRISES IN RURAL AREAS

Most microeconomic research deals with a single enterprise or group of enterprises. Typically, specialists in agricultural finance work on the unstated assumption that the sole commercial activity of the borrower's household is farming. Likewise, researchers and decision-makers in the small industry field work on the assumption that such industrial borrowers have no commercial commitment other than manufacturing. Failure to allow for multiple commercial activities leads to a faulty analysis of resource allocation and to development schemes that do not achieve their objectives.

A more realistic modeling of the diversity of rural households is set forth in Figure I. A household of Type A is the one most frequently considered in farm management analysis where it is assumed that 100 percent of productive time is spent in farming activities the year-round. Type D is that assumed by the small industry specialist: the sole commercial activity is manufacturing. These pure types, however, probably account for less than half of rural households. In Type B the household mixes farm and non-farm enterprises, such as manufacturing, over the entire year. In Type C household labor is always 100 percent specialized, but the specialization changes with the season. Types E and F parallel B and C in the simultaneous or sequential mix of enterprises, but here both activities are non-farm.

A variegated collection of empirical studies can be drawn upon to indicate the proportion of rural households that fall within Types B to F. Census data

Figure 1
Commercial Production and Time Allocation in Rural Households



on non-farm employment, which exclude those for whom it is a secondary occupation, reveal that for 13 countries from 14 to 49 percent of the rural labor force is engaged in non-farm activities (Chuta and Liedholm, 1979). If rural towns up to 20,000 or 30,000 are included, the range rises to 24 to 51 percent (Anderson and Leiserson). And when secondary occupations are brought into the picture the proportion of rural households that have some of its members engaged in non-farm commercial activities will rise much higher. Thus in the Rural Off-farm Employment Project in Thailand, Sirichati reports for a sample of 400-odd households that for both men and women, but at different seasons, 70 percent of their time is devoted to non-farm enterprises during certain months of the year. And a majority of the Thai households, conforming to Type B, maintained at least one non-farm enterprise throughout the year (Kiatying-Ungsulee).

Non-farm enterprises provide income as well as employment. In Japan, where commuting to wage employment in urban areas has become a prominent factor, off-farm income grew from 50 to 71 percent of rural household income between 1960 and 1975 (Meyer and Larson). In the same period the share grew from 13 to 43 percent in Taiwan, and represented a fifth of average rural household income in Korea. In the African cases wage earnings, which vary considerably, are primarily limited to rural rather than urban employment. In Sierra Leone the off-farm income share was 36 percent, of which less than a third derived from wage earnings. By contrast in Kenya, where large plantations are common, of the 41 percent off-farm income share, over one-half was generated by wage employment (Kilby).³ In Thailand non-farm enterprises accounted for 43 percent

³The breakdown of the 41 percent is as follows: non-farm enterprises -- 9 percent, regular wage employment -- 15 percent, casual employment -- 7 percent, remittances from urban relatives -- 8 percent, and other gifts -- 2 percent. "Off-farm" income includes returns for (footnote continued on next page)

of total household income, with wage earnings adding another 16 percent (Chalamwong).

The existence of multiple enterprises in the rural household has far-reaching implications for the allocation of resources, particularly the fungible resources of unspecialized labor and capital. Indeed, in a low-income, high-risk environment the flexibility of the rural household is a major source of competitive strength vis-a-vis the specialized large-scale producers in the urban sector.⁴ With respect to our immediate concern, multiple sources of cash receipts affect the working capital situation in two ways.

The demand for external finance that a commercial enterprise gives rise to is affected by its synchronization with the household's other cash-generating activities. In contrast to Type A and D, which are completely specialized, it is virtually certain that the two or more simultaneous enterprises (Types B and E) will have non-identical time patterns of cash surplus and deficit and hence provide internal cross-finance. This complementary effect, which reduces the need for external borrowing, may or may not hold for Types C and F. Furthermore, with mixed enterprises, households are likely to be subject to less year-to-year income variation, thus being less risky customers when they choose to borrow.

Earlier we spoke of the positive aspects of fostering short-term lending schemes for non-farm firms. There is also a cautionary side, in which multiple enterprises play a role. The liquidity of working capital means that it is

household labor provided for both agricultural and non-agricultural employment off the household's farm. "Non-farm" income would exclude the returns for agricultural employment off the household's farm. Remittances from migrants are excluded from both "off" or "non-farm" income figures.

⁴See Lipton.

particularly vulnerable to being diverted to another household enterprise, to non-productive assets or to consumption. Beyond this diversion problem, there is the difficulty of distinguishing between true demand for productive working capital and a demand for working capital as plasma to prolong the life of a loss-producing enterprise.

III. RURAL MANUFACTURING ENTERPRISES AND WORKING CAPITAL

The sizeable literature on small industry by non-agricultural economists,⁵ much of which is applicable to rural small scale industry, covers numerous aspects of small manufacturing ventures, but working capital is not among these. The explanation for this lacuna would seem to be an academic tradition focused on fixed assets, an orientation of aid donors toward lending schemes with a high foreign exchange component, and a paucity of requisite statistics. A recent survey by David Kennett reveals that systematic data on the level and composition of working capital are available only for India and then only for firms engaging ten or more.⁶

⁵The post-World War II study of small scale industry in developing economies commenced in India in 1953. During the following decade, research on the "Indian model" was carried out in many Asian and Latin American countries; most of the investigators had connections with the Stanford Research Institute and the Ford Foundation. The focus was on "modern" small industry of relatively large scale, with a policy orientation toward intensive assistance to selected firms. An overview of this tradition can be found in Eugene Staley and Richard Morse. After a hiatus of about a decade, interest in small scale industry re-emerged in the garb of appropriate technology and the informal sector. Now the focus is on the lower end of the size distribution, typically with a rural orientation and eschewance of subsidized assistance for a privileged minority. Perhaps reflecting the normal lag between theory and practice, technical assistance programs -- whether they be bilateral World Bank or UN-sponsored -- are virtually all designed on the Indian model.

⁶We are indebted to Kennett's excellent survey for directing us to the pertinent empirical references for the U.S. and India.

Working capital is a firm's investment in short-term assets. These consist of cash and short-term securities, accounts receivable and inventories. Inventories, sometimes referred to as physical working capital, are comprised of raw material stocks, works-in progress, and finished goods. In accounting terminology the firm's short-term assets are labelled gross working capital or total current assets; this is contrasted with net working capital, which is total current assets less total current liabilities (e.g., accounts payable and short-term loans from others). The concept we employ in this paper is gross working capital. Owing to the nature of our data, within gross working capital we will pay particular attention to inventories.

The level and composition of working capital is subject to wide variation. Available evidence indicates that such variation is related to level of development, to industry group, to type of enterprise within an industry group, and finally, to the individual enterprise. In the U.S. the ratio of working capital to fixed assets for large manufacturing units is 1.3 versus 2.0 for small manufacturers; this compares to 1.6 for small manufacturers in India (Kennett). Much of the U.S.-Indian difference for small establishments is attributable to the far smaller holdings of cash in India, where it is only 5% of working capital as compared to 16% for the U.S.

Although inventory appears to be the largest component of working capital in all cases, it is relatively more important in developing countries. In India, for example, inventory represents approximately 60% of total working capital of small manufacturing enterprises, while in the U.S. it comprises only about 40 percent (NCAER and U.S. Government). Further, the relative magnitude of inventory also appears to vary by industry group within a country. In Sierra Leone the inventory-to-sales ratio for small enterprises varies from 1.5 percent for the baking industry to 11.4 percent for carpentry (see Table 1). There are also systematic differences in the inventory sales ratio by major

TABLE 1

Average Inventory/Annual Sales Ratios for Small Scale Enterprise Types
by Economic Profitability and Location, Sierra Leone, 1974

Industry	Economic Profit		Location		All
	Positive	Negative	Urban	Rural	
Tailoring	.024 (n=34)	.031 (n=31)	.029 (n=38)	.026 n=27)	.027 (n=65)
Gara Dyeing	.017 (n= 4)	.038 (n= 2)	.022 (n= 5)	.031 n= 1)	.023 (n= 6)
Carpentry	.074 (n=11)	.339 (n= 2)	.099 (n= 9)	.148 n= 4)	.114 (n=13)
Blacksmith	.030 (n= 6)	.060 (n= 4)	.038 (n= 4)	.045 n= 6)	.042 (n=10)
Baking	.013 (n= 9)	.020 (n= 4)	.013 (n= 9)	.020 n= 4)	.015 (n=13)
Other	0 (n= 0)	.203 (n=??)	.116 (n=21)	.312 n=11)	.203 (n=32)
Total	.036 (n=64)	.114 (n=75)			

Source: Computed from survey data collected for the Sierra Leone small scale industry study (Liedholm and Chuta).

enterprise types within an industry group. Within the Sierra Leone tailoring industry, the inventory-to-sales ratio for more "factory-type" tailoring enterprises was 10.4%, while that for "job-shop" tailors, where customers supply the material, was only 2.4%. Finally, even within enterprise groupings, there are often quite wide variations between individual firms. The inventory-to-sales ratios for "job-shop" type tailors in Sierra Leone, for example, ranges from .5 to 5.7 percent.⁷

What accounts for these variations in working capital composition, particularly inventory? There are clearly a variety of factors at work. In the next section we examine this issue in terms of the factors affecting the demand for and supply of working capital.

IV. DEMAND FOR WORKING CAPITAL

The demand for working capital arises because production and sales are not perfectly synchronized: the dates of payment for inputs do not match the dates of corresponding sales receipts. We may partition into seven categories those factors that are the principal determinants of demand for working capital

The quantity of working capital demanded will vary directly with the volume of sales. This follows by definition since the principal use of working capital is to finance labor, raw materials, and other purchased inputs that go into the goods produced for sale. Inventories, following Baumol's model, are usually believed to be a function of the square root of sales. The "real world" validity of this model, however, has been questioned; with alternative specifications, for example, even a linear relationship can be posited (Sen).

⁷These figures were derived from survey data generated from the 1974 Sierra Leone small enterprise project (see Liedholm and Chuta for details).

2. The quantity of working capital demanded will vary inversely with the capital-intensity of production. The more capital-intensive is production the higher will be fixed capital costs and the lower will be variable costs (assuming fixed assets are owned rather than rented). It is principally variable costs that are financed by working capital. Since most rural manufacturing is more labor-intensive than its urban counterpart, the former's relative demand for working capital will be correspondingly higher. The fact that the rural firms use a higher proportion of family labor will not affect this conclusion unless they would otherwise make no contribution to family income.
3. The quantity of working capital demanded will vary directly with the length of the production period and with the length of the marketing period for raw materials and finished goods.

This relationship can be illustrated by two simple examples. Producer A manufactures common wooden chairs. He purchases lumber from a nearby sawmill four days before he commences production on a typical order of 20 chairs that take him ten days to produce. The buyer takes delivery upon completion and pays cash. In contrast, Producer B makes high-quality chairs from kiln-dried wood sent from the capital city which must be ordered and paid for 56 days prior to its arrival. Production of 20 chairs requires 14 days and the buyer is given 28 days from delivery to pay.

In the case of A, raw material has to be financed for four days and then all other variable costs for ten days. If raw material cost is 40 percent of sales, other variable costs are 30 percent and this cycle is repeated 32 times a year, the ratio of working capital to annual sales is roughly

3 percent. In the case of B, raw material purchases must be financed for 56 days and accounts receivable for 28 days, in addition to the 14 days of work-in-progress. If the same cost ratios and 320 day working year apply, the working capital-sales ratio is 16 percent.⁸

Of the five-fold difference in working capital requirements of the two firms, differences in production period account for only one-tenth. As we shall see later, wide differences in observed working capital ratios in the same industry are most frequently the result of differing marketing arrangements, which may range from paying for raw materials in advance and selling on credit, as in B. to subcontracting or work to order where the customer supplies the raw material and pays cash on delivery.

4. The quantity of working capital demanded will vary directly with economies of large-lot raw material purchases. Insofar as the transaction cost of placing a raw material order are fixed irrespective of size and, more importantly, the seller gives price discounts for bulk purchases, it will pay the firm to hold larger raw material inventories up to that point where the marginal carrying costs are equal to the marginal savings on raw material price. For the rural producer, however, the scope for obtaining economies of bulk purchasing are quite modest compared to the infrequent availability of transport for delivery. Hence, we predict, as Kennett has before us, that rural producers will carry relatively larger inventories than their urban counterparts.

⁸ Inventory = raw materials + work in progress + finished goods
(all expressed as a percent of sales)

$$INV_A \div SALES = [.4(\frac{4}{10}) + .70 + (0)] \frac{\text{sales}}{32} = 2.7\% \text{ of annual sales}$$

$$INV_B \div SALES = [.4(4) + .70 + 2(.70)] \frac{\text{sales}}{23} = 16.1\% \text{ of annual sales}$$

5. The quantity of working capital demanded will vary directly with external environmental risk (Chart 1). These include unpredictable events such as failure of electricity supply, defective equipment, theft, and breakdown in supply firms that interrupt or reduce sales without causing a compensating reduction in costs (e.g., wages). A second group of unpredictable events are the result of government policies. Shortage of critical spare parts owing to import quotas, a flood of duty-free competitive imports owing to illegal issuance of licenses to the politically influential, delayed payment for sales to government agencies, delays in issuing permits -- all these absorb working capital. Entrepreneurs tend to be over-optimistic about the frequency of these events; only a small proportion of firms maintain precautionary reserves for their occurrence.

6. The quantity of working capital demanded will vary inversely with managerial efficiency. Since gross profits are a major source of cash, anything that reduces profits has the potential to increase demand for working capital. Three types of managerial shortcomings are identified in Chart I. The first four items reflect inadequacies of technical knowledge and industrial engineering. Poor product quality, slow rates of throughput and materials wastage affect working capital via a reduced profit component in cash flow; machine breakdown, owing to lack of maintenance or operator malfunction, lengthens the production period. The second group of entrepreneurial failures, involving financial control, represents a simple leakage of working capital. The third group are marketing shortcomings; their impact is to reduce sales revenue.

Insofar as a significant part of an established firm's need for additional working capital derives from any of these internal causes, ceteris paribus

I. External Risks

Power failure
Defective equipment
Theft
Breakdown in supplier firms

II. Policy-Created Risks

Imported input shortage
Illegal import dumping
Delayed public agency payments
Delayed government assistance
Harassment by municipality

III. Entrepreneurial Shortcomings

Product quality
Rate of throughput
Machine breakdown
Materials wastage

Pilferage of materials and product
Clerical theft
Defaulted customer credit
Non-business cash withdrawals

Failure of transport
Loss of distributors
Product pricing

receipt of loans or raw materials on credit will undermine the natural pressure for corrective action and add to the scarce capital resources that are lost.

7. The quantity of working capital demanded will vary inversely with the cost of borrowing. The cost of borrowed funds is made up of three components as noted by Adams and Nehman: (i) the nominal rate of interest charged on the loan, (ii) transactions cost incurred by the borrower and (iii) expected changes in the purchasing power of money over the loan period. Transactions costs for obtaining a formal loan are surprisingly high, and for a small loan proportionately very high. They include application fees, form filling fees, travelling expenses, entertainment expenses and the opportunity cost of the entrepreneur's time in travelling and waiting to see officials.⁹ The expected rate of inflation is an offset against the nominal interest charge as also is complementary technical assistance that sometimes goes along with a government loan. Loans in the curb market entail hardly any transactions cost, no complementary services and far higher interest. But informal loans have the great advantage of a short interval between loan request and disbursement.

V. SUPPLY OF WORKING CAPITAL

Firms obtain working capital from both internal and external sources. The original capitalization of rural manufacturing enterprises, including working capital, is overwhelmingly obtained from personal savings, gifts and informal

⁹In Haiti, for example, entrepreneurs reported that more than 50 percent of the loans they received took longer than three months to process (Haggblade).

loans from friends and relatives.¹⁰

The major source of working capital for expansion of existing units is their own "free cash flow" of depreciation and profit not already committed to servicing debt. In Sierra Leone 90% of expansion funds were derived from this source, while the figure was 81% in Haiti. However, while internal cash flow is the most important source of working capital, it should be recalled from the earlier discussion of fungibility that there are often substantial "leakages" to other household enterprises, to financial investments or to consumption. As with potential managerial inefficiency, the possibility that this type of siphoning-off is occurring makes the assessment of creditworthiness by a lender extremely difficult.

The four external sources of short-term credit -- supplier, customers, commercial banks, the curb market -- are of far less quantitative significance. The most important external source is customer credit. One form of customer credit is subcontracting, where the customer, typically a much larger firm, supplies the rural enterprises with all the raw materials required to produce the goods ordered. This usually will occur in ready-made garments, knitting, furniture, artistic handicrafts and footwear components.¹¹ More widespread is the practice of retail customer supplying the producer with either the raw material, (e.g., fabric for a garment), or a cash down-payment sufficient to purchase the needed raw material (e.g., furniture, wrought iron, farm tools,

¹⁰These sources represented 81 percent of the original capitalization of surveyed firms in Sierra Leone (Liedholm and Chuta), 94 percent in Jamaica (Fisseha and Davies), and 91 percent in Haiti (Haggbalde) -- all future references to these countries are from these sources and will no longer be cited. Government lending schemes for manufacturing focus on large scale enterprises in urban areas.

¹¹In Thailand Donald Mead reports that subcontracting can also be found in the production of fuses, Christmas tree lights, silk weaving and the making of fish nets.

leather goods). Although these are frequently individualized products, the critical attribute appears to be that the value of the finished good is significant relative to the producer's supply of working capital. Of course, to arrive at the net supply of working capital supplied by customers, we must subtract credit extended to any other group of customers.¹²

Such advance payments by customers (i.e., a shortening of the marketing period described earlier) represents an interesting response to the obstacles faced in a low-income community where financial intermediation is limited. The customer temporarily foregoes the power to consume and receives in return implicit interest in the form of a lower price. The producer avoids the entrepreneurial risk inherent in producing for inventory. For communities where income and tastes are stable, it is a very efficient economic system.

A second external source of working capital are accounts payable to suppliers. Normally this facility is reserved for customers with well-established businesses and good payment records; it is provided without collateral but the implicit interest rate is high. Supplier credit to large units (i.e., over 10 employees) in urban areas is quite common. For smaller rural units, typically employing one to three workers, supplier credit is rare.

A third external source of working capital is commercial banks. Survey data from Sierra Leone, Haiti and Jamaica indicate that commercial banks provide 1-2% of the initial financing for rural manufacturing units and from 0-8% for expansion. This very limited participation of commercial banks in the non-farm sector is attributable to the collateral requirements and the transactions costs facing the borrower and, from the bank's viewpoint, the perceived high costs and risks associated with such loans.

¹²We have no information on the volume of credit extended to customers, although we know a significant fraction of producers do extend some credit. In Haiti, 70% of the entrepreneurs reported giving credit compared to 34% in Jamaica.

The final source of external credit is the curb market. In the dozen-odd countries of which the authors have personal knowledge, there is no significant use (say 10% or more of average working capital) of the curb market by small manufacturing enterprises.¹³ Yet the curb market receives a vast amount of attention, unfortunately more exhortatory than investigative in nature. The reason for the interest seems to be that it is viewed alternatively as a marvelous self-clearing market which supplies the credit needs of high-risk borrowers without sufficient collateral, or as a market dominated by rapacious moneylenders charging usurious interest rates. In most cases recourse to moneylenders occurs at infrequent intervals for small loans for a few days in response to a severe emergency. If for no other reason, at interest rates of 50-to-150% any meaningful reliance on the curb market is out of the question given the sector's generally moderate profit rates.

Such are the sources of supply for short-term finance. The major determinants of how much working capital each source is willing to provide are a function of their assets and income, the opportunity cost of their funds, the interest rate on working capital, administrative costs, and the risks attendant on such loans.

The cheapest source of working capital is the enterprise's own cash flow. This stems from the absence of administrative costs and a more accurate knowledge of the risk factor. On the other hand, the ease of redirecting cash flow from one household enterprise to another means that this internal source of liquidity is far more sensitive to alternative yields among the various household activities than is normally the case.

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In Haiti 0.9% of the firms used moneylenders for their initial purchase of equipment and raw materials; for expansions investment the figure was 1.7%. In Sierra Leone initial reliance was 0.9% and 3.9% for expansion.

For external sources of supply, on the other hand, the administrative costs and risk components become more important elements in the cost of funds. Administrative costs of lending to smaller firms are typically quite high and above those incurred when lending to larger enterprises. Elements such as recording and disbursing the loan tend to be fairly constant regardless of the loan size and thus loom large for small loans. Information costs required to ascertain risk tend to be absolutely higher for loans to the small firms, owing to the heterogeneity of these enterprises and their general failure to keep records.¹⁴

The risk premium is also likely to be an important ingredient in determining the external supply of working capital to rural, non-farm enterprises. Although the sector as a whole may well be viable and resilient, failure rates for individual firms can be quite high. In Sierra Leone the small enterprise failure rate was approximately 10% per year with the vast majority failing within the first three years (Chuta and Liedholm, 1982).¹⁵

One of the reasons that "risks" for financial institutions are high in this area is because it is difficult and expensive to obtain the information needed to screen the good borrowers from the "lemons."¹⁶ Since it is difficult

¹⁴In the Philippines, for example, administrative costs for a given value of small enterprise lending were six times that for larger enterprises (Saito and Villaneuva), while in Jamaica, Wilson found that it could cost the Small Enterprise Development Corporation (SEDCO) as much as J\$1,300 to process a loan application of J\$500!

¹⁵Moreover, default rates on small enterprise loans also can be quite high. In Jamaica, for example, 40% of the Small Business Loan Board were deemed uncollectable (Wilson) while in Kenya up to 45% default rates were reported (Kilby). Low default rates, however, on small enterprises loan programs have been reported in Ghana (Steel).

¹⁶See Akerlof for a more extensive discussion of the problem. Risks are also high because of deficient loan collection procedures of lenders, particularly public lenders. See below for a more extensive discussion of this point.

to vary interest rates by risk of borrower and potentially good borrowers are often indistinguishable from "bad" borrowers, the former may in some instances be driven out of the market. Commercial banks attempt to reduce the risk premium and the need to gather extensive information by insisting on full collateral and by dealing only with known borrowers. Indeed, in the Philippines, the risks of lending to unknown borrowers was estimated to be 10 times or more the risk of lending to known, creditworthy borrowers (Anderson). Input suppliers and moneylenders, on the other hand, often have considerably more knowledge about the borrowers' business than do commercial banks. Yet, even they are not immune to high risks. In Sierra Leone, for example, local traders with good knowledge of the community, found their average 168 percent loan to small rural enterprises yielded an average of only 43% due to delayed payments and default (Linsenmeyer).

VI. TESTS OF HYPOTHESES

What empirical support exists to verify any of the hypotheses relating to the determinants of demand for working capital? Data are at best scarce: however, a limited amount of information is available from the Sierra Leone small enterprise study to enable us to conduct a limited investigation of several of these propositions with respect to physical working capital. In the Sierra Leone survey, conducted in 1974, 250 small scale enterprises were interviewed twice weekly over a twelve-month period to generate flow information on sales, output, costs, profit and stock information on inventories and fixed capital.

The hypotheses presented above combined with the data enable us to formulate the following demand model. The absence of information on credit supply requires an assumption that supply factors are not systematically linked to demand. Of necessity, the dependent variable is the enterprise's total

¹⁷For more details, see Liedholm and Chuta.

inventory, since data on the firm's other components of working capital are either missing or incomplete. The available variables expected to explain inventory are: sales, economic profits, location (rural versus urban), and type of industry group (e.g., carpentry, baking, tailoring). Sales would be expected to be positively related to inventory levels, although the specific forms of that relationship are many. Economic profit, defined to reflect the shadow price of all inputs and thus ensure that a marginal firm would have a zero rate of profit, would be expected to have a negative relation to inventory levels. Profits provide a reflection of managerial efficiency and well-run enterprises would be expected to require less inventory than poorly-run ones. Location is also hypothesized to affect inventory levels. Rural enterprises would be expected to carry a higher inventory than those in urban locations because of the more infrequent availability of transport. Finally, the particular characteristics of the specific industry, such as the length of its production and marketing period, will vary from industry to industry and thus lead to differing inventory requirements.

The statistical regression model investigated was specified as:

$$INV = a + b \sqrt{S} + c (P) + d (R) + e (C) + f (B) + g (T)$$

where INV is inventory level, a is a constant, S is sales entered in terms of its square root in accordance with Baumol's "square root rule," P is economic profits, R is a dummy variable equal to one if the enterprise is located in a rural area (i.e., locality size less than 20,000 inhabitants), C is a dummy variable equal to one if the enterprise is carpentry, B is a dummy variable which is equal to one if the enterprise is baking, and T is a dummy variable equal to one if the enterprise is tailoring.

The results, based on the sample of 138 small scale manufacturing enterprises that possessed the required data, were:

$$\text{INV} = -242.2 + 10.5 \sqrt{S} - .095 P + 4.6 R + 256 C - 62 B - 19T$$

(78.2) (1.4) (.021) (61) (108) (137) (64)

$\bar{R}^2 = .51$; sig p < .01 (NB. standard errors are in bracket).

For a cross section analysis, the results indicate that the equation has provided a reasonably good estimate of the underlying determinants of the demand for working capital. The individual components must now be more fully examined.

Not surprisingly, the level of sales was found to be an important determinant of inventory levels. The square root of sales coefficient was positive and significant at the 1 percent level. Moreover, the results would seem to also provide additional empirical support for Baumol's square root rule, since an alternative linear specification of this relationship provided less powerful statistical results.¹⁸

Economic profits were also found to be an important determinant. The economic profits coefficient was negative, as predicted, and significant at the 1 percent level. Thus, our contention that managerial shortcomings, for which economic profits is a proxy, would be reflected in larger inventories seems to be borne out. The actual mean inventory/sales ratios for different industry groups, arrayed by whether or not the enterprise generated a positive economic profit, are presented in Table 1.

The location coefficient, on the other hand, was not found to be statistically significant. The evidence, however, presented in Table 1 in which mean inventory/sale

¹⁸The equation with sales as a linear function of inventory yielded a \bar{R}^2 of only .44 and an F value of the coefficient of only 38 as opposed to an \bar{R}^2 of .50 and an F value of 55 in the square root "formulation." Moreover, in a final regression formulation in which the log of inventory and the log of sales were entered, the sales coefficient was not significantly different than .5, the value predicted by the "square root rule."

ratios for industry groups arrayed by rural and urban location are portrayed would seem to indicate rural enterprises generally do have higher mean inventory levels. Evidently, however, when all other variables are taken into account, these systematic variations lose their significance.

Finally, the results of our analysis indicate that there are some significant variations in inventory levels by industry group. Specifically, the carpentry coefficient is positive and statistically significant at the 10 percent level. Indeed, carpentry, which appears to have a longer marketing and production period than other small enterprise groups, has a significantly higher inventory/sales ratio than other enterprises. The bakery and tailoring coefficients, however, were not statistically significant, although in Table 1, mean values for the inventory/sales ratio did appear to vary importantly from enterprise group to enterprise group. Finally, it should be noted that the mean inventory/sales ratios for the product groups in Sierra Leone were quite similar to the inventory/sales ratios obtained from our preliminary results of the analysis of Honduras and Jamaica data.

VII. POLICY IMPLICATIONS

Given the heterogeneity of rural non-farm enterprises within any one country and the variations between countries, it is difficult to generalize about the liquidity problems facing the sector. In some cases, the demand issues predominate, while in others it is supply issues. Nevertheless, several policy recommendations do emerge at this stage.

Some of the short-run capital problems facing rural enterprises are traceable to demand constraints. In some cases, effective demand for working capital may be low because the activity is not economically viable or because particular enterprises suffer from disabilities such as poor management. Indeed, the effective demand is frequently lower than the entrepreneur's perceived demand for working

capital, since other problems (e.g., managerial failures, raw material bottlenecks) often are misperceived as a working capital need.

The limited evidence available from those countries with adequate profit data such as Sierra Leone (Liedholm and Chuta), and Thailand (Artkongharn), however, indicates that a significant fraction of the rural non-farm activities are economically viable and thus capable of generating a strong effective demand for working capital in these cases. The experimental credit program in Bangladesh, which was designed to provide loans primarily to small farmers, discovered an unexpectedly strong demand for non-farm loans even at "high" interest rates when the supply was assured (G. Adams).

In general, constraints on the supply side appear to be more significant in explaining short-run financial problems than those on the demand side and it is in the former area that most of our policy recommendations emerge. Increased flexibility in loan terms, measures to reduce administrative costs and risks of lenders, more experimentation with informal lending sources, removal of imperfections and better integration of the rural financial markets are more specific suggestions that will now be examined in greater detail.

Increasing interest rates to enable banks and non-bank intermediaries to more adequately cover their risks and administrative costs emerges as a major policy recommendation. A central theme of this colloquium is that controlled interest rates discourage lending to small farmers and businesses. When credit is underpriced, all businesses receive a subsidy in direct proportion to the size of their loans; large borrowers receive large grants while small borrowers receive small grants. Moreover, the lender's non-price credit rationing of the excess demand generated by interest rate ceilings restricts the access of smaller enterprises to formal credit (Gonzalez-Vega).

Several factors may limit formal sector interest rates, however, from rising to risk and cost-reflecting levels.¹⁹ First, political considerations may dictate against increasing interest rates for small rural enterprises to unduly high levels. Secondly, higher interest rates may result in an adverse selection of borrowers by attracting the riskier and deterring those whose projects have a lower, but far more certain rate of return (Stiglitz and Weiss). As a result, lenders might still be faced with a credit rationing system in which good borrowers could potentially be driven out by the improperly screened "lemons."

Consequently, even with higher interest rates, mechanisms are needed to improve the information gathering and screening procedures of those financial institutions making short-term loans to rural, non-farm enterprises. In this connection, for example, financial institutions need better procedures to distinguish the true effective demand for working capital from the specious demand that only serves to sustain temporarily a fatally ill enterprise. Norms for inventory and working capital needs by type and size of enterprise might also be developed for use as rules of thumb in screening as well as in determining lending levels.²⁰ Such improved screening devices should contribute to reducing lender risks.

Risks can also be reduced markedly by improving loan collection procedures. Although borrowers are often able to repay, they frequently are tempted not to do so, particularly when large numbers are known not to be repaying. If there

¹⁹ This section relies heavily on the discussion in Anderson.

²⁰ The Tandon Report established such norms in India. Data from small rural enterprise surveys, such as portrayed in Table 1, may enable such norms to be established for non-farm enterprises in other countries.

are prospects of receiving additional working capital loans and if these are conditioned on the repayment of past debts, timely repayment of existing loans should improve. Moreover, such procedures as threatening foreclosure, advertising delinquencies or cases under litigation, or mounting loan collection drives can have dramatic results. Although it took some time for these procedures to have an effect, they were probably responsible for reducing the arrears by one half in a Philippine small scale enterprise project (Anderson).

With the accumulation of experience and improved information, the risks faced by lenders to rural non-farm enterprises should decline over time. Loan appraisers' and loan officers' judgments will improve with an increase in knowledge of specific trades and with the general experience they gain by lending to this sector for several years. These lending institutions, however, are not going to willingly engage in this "learning by doing" process unless its high cost (initially high default rates) can in some way be absorbed. The appropriate analogy is infant industry tariff protection. A guarantee scheme is one such cost absorbing mechanism. Commercial banks would be more willing to provide unsecured short-term loans to rural enterprises if the amount guaranteed were reasonably high (at least 80 percent of the loan losses covered) and if all screening costs above those incurred for standard loans could be shifted to the guarantor. Most critically, after some specified period under the guarantee, the banks would be required for any borrower in good standing to continue to extend the credit facility at their own risk; the guarantees thus would serve to "prime the pump" during the learning period.²¹

In addition to these recommended improvements in the formal lending schemes, there is also a need for more experimentation with informal lenders

²¹See Kilby for a more extensive discussion of the mechanism.

as sources of short-run credit. Input suppliers, assemblers, processors, traders, and moneylenders, are important potential conduits for on-lending to rural non-farm producers.

In general, the rural non-farm sector is likely to benefit from the removal of distortions and constraints that exist in rural financial markets. Because of fungibility, for example, some borrowing supposedly for farm enterprises actually supports some non-farm activity. Ideally, however, constraints placed on the use of rural credit should be removed so that rural households can more easily allocate their financial resources where they perceive the highest return. Credit controls which attempt to prevent leakage of funds to unapproved uses usually have only limited success, but do lower the value of the loan to the borrower and increase the cost of financial intermediation. Correspondingly, constraints should also be removed that prevent specialized farm lenders from lending short-term funds to non-farm enterprises. Given the heterogeneous nature of rural non-farm enterprises, financial services must be very flexible and tailored to the local level if their needs are to be serviced. Consequently, financial markets that are integrated, decentralized and relatively unfettered will be needed before many of the financial requirements of these rural non-farm enterprises can be met.

Finally, an approach that would help both borrowing and non-borrowing rural firms and households in all countries is one emphasizing the expansion of a full range of banking services. The present heavy emphasis on subsidized agricultural credit has discouraged such expansion. The financial intermediaries involved have come to rely upon cheap funds provided by central government and international donors. There have been few incentives and little need to develop savings mobilization strategies and expand and perfect banking services. Fixed low interest rates for lending prevent offering attractive interest rates for

savings. Thus the rural sector is denied access to complete financial services. If interest rate regulations are relaxed and less reliance is placed on top-down supplies of funds, the environment will be improved for an expansion in self-financed financial intermediaries. Indeed, the rural non-farm sector will likely derive far greater long-term economic and social benefits from the development of sound rural financial markets than it would from subsidized credit programs and from specialized lending institutions designed to help only a select, few enterprises.

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