Subsector Analysis: Its Nature, Conduct and Potential Contribution To Small Enterprise Development

by

James J. Boomgard, Stephen P. Davies,
Steve Haggblade and Donald C. Mead

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1986

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1. INTRODUCTION AND OVERVIEW

This paper is concerned with the conduct of meaningful policy and project relevant research on small enterprise development. It responds to a growing demand for operationally useful small enterprise research, a demand which has surged over the past ten years in the wake of increasing concern with equity issues coupled with recent evidence on small enterprise efficiency.

Past research efforts have whetted the appetites of decision makers by documenting the important role small enterprises can play in economic development strategies. This research -- largely cross-section census work coupled with measurement of input-output coefficients and firm profitability -- has provided important direction to policy makers. It has identified categories of goods and services which small-scale enterprises (SSE) appear to supply with particular efficiency. It has directed attention to key macro policy variables (tariff and exchange rates, credit and industrial policy) that have tended to discriminate against small firms, thereby compromising employment, income distribution and often efficiency objectives. While these general guidelines have been important to policy makers, it has proven difficult to proceed to the next step in this analysis, developing specific targeted interventions, particularly for individual industries. In addition to missing some important policy and project interventions, the conventional research has required detailed and extensive data collection that has often been both slow and expensive.

This is not to diminish the importance of or need for carefully collected and analyzed quantitative micro-level data. The systems

overview we recommend provides a framework in which rapid diagnostic research as well as detailed empirical work can be conducted. For this reason, we view subsector research not as a substitute for current research practice but rather as a complement to it, providing a framework in which it can be done more effectively and more efficiently.

The goals of this paper are several: to describe the subsector approach to small enterprise research; to suggest a standard set of procedures and terminology; to give examples where we have found the approach to be useful; and to suggest ways in which a subsector orientation can most profitably be blended with more established quantitative research. The body of the paper begins, in Section 2, with a general description of the subsector approach. We contrast it with previous approaches and describe what we have found to be its particular strengths. Section 3 follows with a number of short case studies that we hope will give the reader a feel for what subsector analysis can offer. Against that background, Section 4 moves on to lay out some key procedures to follow in doing subsector research.

2. THE SUBSECTOR APPROACH

2.1. General Features of the Subsector Approach

The subsector approach is a "systems" approach to the study of economic activity.[1] It emphasizes the interdependence of economic units, particularly those involved in the production and distribution process. This interdependence is seen as playing a central role in understanding the dynamics of change and evolution. The subsector approach can also be effectively used for comparative static analysis, examining the implications of alternative development patterns and alternative policy changes or project interventions. The tools of subsector research are similar to those employed in other economic and business studies. They are applied, however, in a setting which affects the choice of questions asked as well as the ways in which these questions are analyzed.

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[1]Subsector analysis arises from the confluence of several closely related strands of applied research. It draws on work done in the marketing literature of the agricultural economics profession, on the applied work done in business schools and on the industrial organization literature in the economics profession.

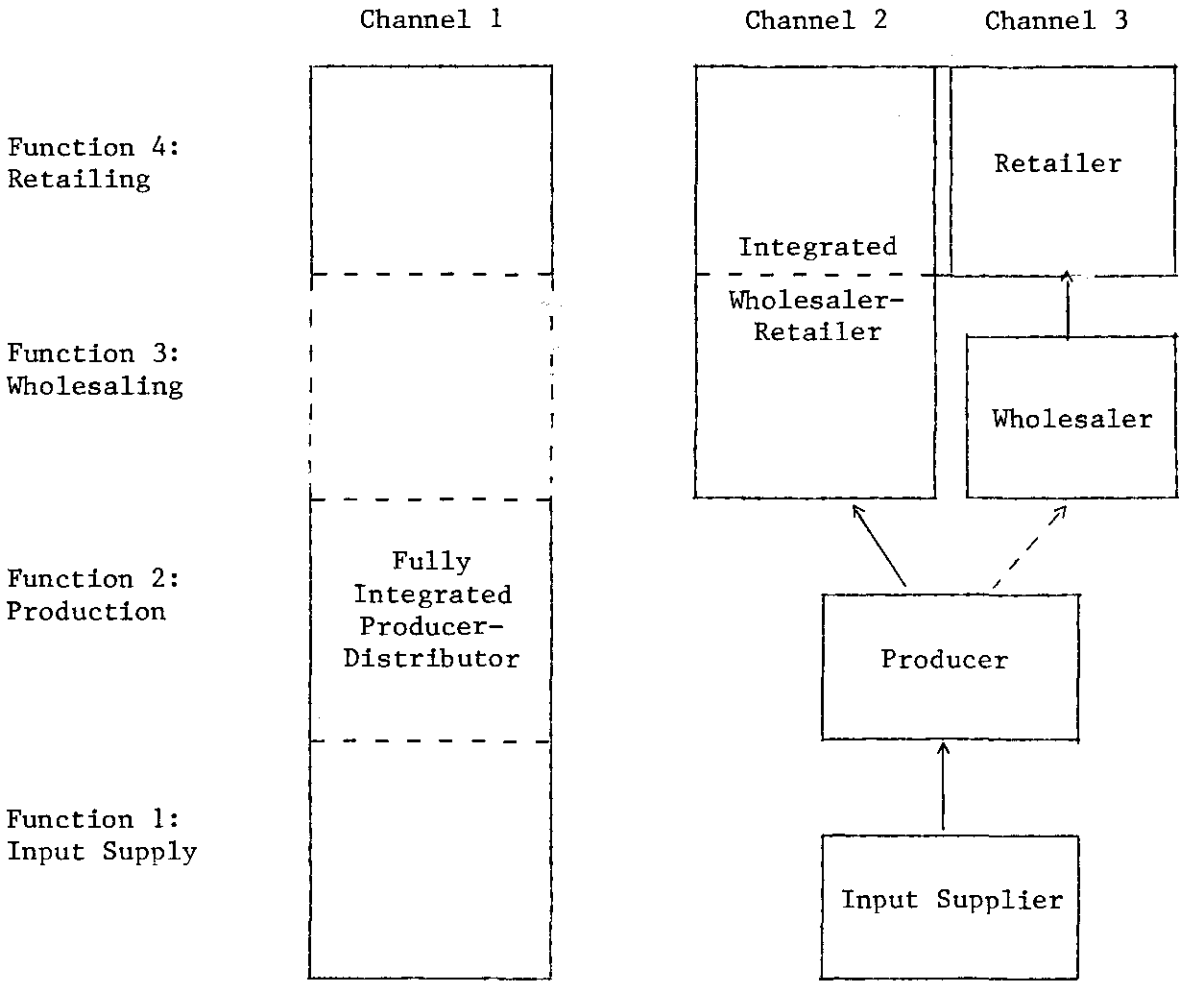
Historically, virtually all early subsector work focused on agricultural commodities, describing and evaluating the economic networks through which individual commodities are transformed and distributed to their ultimate consumers. Although analysis of these agricultural commodity subsectors has taken place at both business schools and in agricultural economics departments, it is the marketing literature of the agricultural economics profession that has most carefully and explicitly discussed and developed the analytical methods and issues involved. Key works in the intellectual history of subsector analysis include Mighell and Hoofnagle (1960); Mighell and Jones (1963); Goldberg (1968); Shaffer (1968, 1973 and 1980); French (1974); and Marion (1976). Two works that attempt to trace the historical development of subsector analysis include McLaughlin (1983) and Haggblade (1984).

2.1.1. Key Subsector Components

The movement of a product from its beginning as a raw material until it ends as a finished product in the hands of consumers involves a progression through a production/distribution system. There are three central features of this movement: a) the individual steps or transformations through which a product goes; b) the mechanisms for linking one step with another; and c) the actors or participants who are engaged in these activities. In discussing these three elements of product movement, we will make use of a key tool, the subsector map, displayed in Figure 1.

2.1.1.1. Functions. Each step or transformation in a sequence of production or distribution activities will be referred to as a function. These steps are most easily described in terms of a progression of production activities: for example the ginning of cotton, spinning of yarn, weaving and then printing of cloth, and finally the making of garments. One needs a broader concept than this, however, including transformations in space, time and ownership as well as in form. Retailing, transportation and storage can be as important as the steps in the manufacturing process itself in placing a finished product in the hands of consumers. The functions themselves can generally be separated into finer components. Transportation, for example, may include loading a truck, driving it to its destination, then unloading it again. The precise definition or delineation of one function is not of central importance for our purposes. In depicting the relationships among functions within a subsector, we have suggested some conventions shown in a subsector map such as that in Figure 1.

Figure 1. The Basic Subsector Map



Legend

□	=	Enterprise Boundary
- - - -	=	Division between Functions within a Firm
□|□	=	Firms using identical technology for a given function
¦	=	Function skipped but implicitly performed by vertically integrated firm
——>	=	Sale of Goods in Spot Market
- - ->	=	Contract Sales

2.1.1.2. Coordinating mechanisms between functions. Moving a product through the production/distribution system requires a mechanism for linkage or coordination between functions. In broad outline, there are two ways in which this coordination can be achieved: a) through a hierarchical system within one firm or one central planning bureau, where the owners or managers make decisions and then issue instructions; or b) through sales, either in spot markets or based on forward contracting. Forward purchases and sales involve the completion of functions "on order," including contract or subcontract production. As we shall see, the reliability and cost of alternative coordinating mechanisms can be of considerable importance in defining the potential role of small enterprises in such a system.

2.1.1.3. Participants. The third feature of interest in a production/distribution system is the actors, or participants in the system. Among the important characteristics of these actors are the number of different functions brought under the domain of one decision-making unit (the degree of vertical integration) and the techniques of coordination used to link functions, both between actors and within the domain of any one producer.

While functions provide the horizontal dimensions and coordination mechanisms the vertical dimensions of the grid on which participants are framed, several additional useful sets of information can be overlaid onto the basic grid to assist in describing firm types. Of notable importance are the volume of product handled by any one producer in a particular function (the extent of horizontal concentration), the resulting scale of

operation and types of production technology adopted within each function (capital intensity, modernity, and so on).

Here again, we suggest conventions for describing participants and technologies, degrees of vertical integration and system flows on subsector maps such as that in Figure 1. Vertical integration, for example, is shown by physically drawing enterprise boundaries across several functions. Notice too that by taking a horizontal slice of a subsector, that is by identifying all the firm-types that perform a particular function or group of functions, one defines what the industrial organization literature refers to as an "industry."

2.1.1.4. The subsector as a collection of channels. Any traceable path through a production/distribution system defines a channel of product transformation. Figure 1, for example, shows three alternative production/ distribution channels. Cutting across one particular function, one finds groupings of firms that participate in alternative channels according to their different up- and down-stream linkages. The existence of these multiple transformation channels determines in part the horizontal structure of the industry. Normally, we would expect channels to be clearly distinguished from the beginning raw material through to the final product. However this will sometimes not be the case, as channels 2 and 3 in Figure 1 illustrate.

A subsector is an aggregation of alternative channels through the production/distribution system for one or a group of closely related

products.[1] The precise delineation of a particular subsector will always be a matter of judgement and will vary from case to case depending on the goals and resources of the study. Regardless of the breadth of a particular subsector, it will be composed of alternative channels through the production/distribution system, and in this way will draw attention to vertical as well as horizontal relationships in the economy.

This perspective does not in any way preclude analysis of the performance of smaller units: classes of firms, establishments specialized in selected functions, or even internal firm structure and organization. But these lower level units will be embedded in higher level systems and need to be understood within the context of the larger systems in which they operate.

In addition to its emphasis on interrelations among economic actors, the subsector approach has an inherently dynamic orientation. The process of change is seen as being integrally related to the evolving strength of different channels in a subsector and of different ways of organizing each channel. Opportunities as well as incentives for change are determined in large part by the structure and organization of the subsector. Furthermore,

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[1]The term "subsector" is the one assigned by the agricultural economics literature; originally it appears in Shaffer (1973).

The term is somewhat misleading, since a "subsector" does not refer to a subcomponent of an individual sector of the economy. Rather a subsector includes a set of economic activities that cuts across several sectors, often the agricultural, industrial and commercial sectors at least. As a descriptive term, "trans-sector" or "cross-sector" would be more accurate, correctly portraying the cross-cutting nature of the flows across sectors.

The subsector label is a vestige of the agricultural origins of the early analytical work. Originally focusing on individual commodities -- that is, commodity subsectors within the agricultural sector -- the term came to apply to the entire set of vertical transformation and distribution channels through which a commodity flowed en route to its final consumer. Although the term "subsector" is somewhat misleading, we have retained it to acknowledge its origin and the important conceptual work that continues to be done under the rubric of "commodity subsectors."

developments in one part of the system can have important repercussions for other parts of the system.

2.1.2. The Environment

Along with the three primary aspects of a production/distribution system -- the functions, the coordinating mechanisms, and the participants -- we must also recognize that such a system operates in a context, an environment. In fact, the environment is often instrumental in the development of particular channels.

The environment has three important components: a) the rules; b) the information flows; and c) the service institutions. The rules include the business laws of the country as well as the customs defining normal and acceptable behavior. These rules cover things that happen "within one function," for example labor laws, as well as things that happen "between functions," such as contract laws. A second contextual question, relating to information flows, concerns the level and patterns of dispersion of knowledge: about technological processes, about markets, about qualities and prices of inputs and outputs, about the rule of the game and the service institutions. The service organizations, the third aspect of the economic environment, could be thought of as input suppliers which are not primary participants in the production/distribution system but which may have important roles in making it work. They include the organizations that enforce the rules, for example, the courts. In a broader context, they can be viewed as the mechanisms for imposing sanctions on those who break the community's rules. The service institutions also include sources of relevant information ranging all the way from newspapers, radios and telephone

systems to institutions and training centers which either supply inputs themselves (for example credit) or improve the quality of inputs (such as labor) available to participants in the system.[1]

2.1.3. The Question of Boundaries

In subsector analysis, one must deal with boundary issues of three types. The first of these might be referred to as boundaries at the outer edge of the subsector. These boundaries delineate the subsector in terms of product types as well as geographical coverage. From this point of view, the critical concern is that the system be defined in such a way that it reflects the principal competitive interrelationships of economic activity. Since competition is defined in terms of markets, the "first cut" boundary can be thought of as an aggregation of firms which are involved in a system producing the same product for the same market.

There are numerous theoretical and practical problems encountered in applying this "same product for the same market" criterion. Those who have attempted to find a precise theoretical or conceptual justification for specifying boundaries of a particular subsector have often been disappointed. In actual research situations, however, it has generally

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[1]The separation suggested here between functions, coordinating mechanisms, and services provided by peripheral institutions is somewhat arbitrary. One could also have referred to finance and coordination as functions, just as we have referred to transport and retailing as functions. In our view, it is more helpful to think of coordination as something which is required to link together all of the individual functions. The treatment of finance as something supplied by a service institution comes from our perception of its role and importance in the production/distribution system. It is more akin to the provision of nails to a furniture manufacturer than the provision of yarn to a weaver. Both the nail-maker and the bank may be indispensable to the operation of the system, but we prefer to think of them as part of the context in which the production/distribution system operates rather than as part of the system itself.

proven quite simple to arrive at a set of systems boundaries that work. One's selection will generally be determined by the goals of the study and the resources available. In a later section of this paper, examples will be presented which illustrate different ways in which subsectors have been defined. The only real issue is to make sure that coverage is sufficiently broad that no important set of participants is overlooked.

A second set of boundary questions concerns the number of functions which must be included in a subsector. One must be sure to go far enough forwards and backwards in the channels to capture any significant differential effects between alternative channels. It is not necessary to go further than that. In the Egyptian garments case study discussed below, for example, spinners and weavers in all channels buy ginned cotton from the same sources, on uniform terms; that being so, a study whose primary concern is garment manufacturing does not need to deal with alternative sources of raw cotton, nor with the ginning function, but can start from the supply of ginned cotton. The same was true of sorghum in the Botswana brewing industry. In other cases, such as the shrimp case study from Indonesia, also discussed below, sources of primary inputs differed substantially between channels, and were of considerable importance in determining the competitive position of alternative channels; in such cases, the subsector analysis had to reach back to include these input suppliers.

There is a third boundary issue, relating to the separation between different channels within a subsector. If every alternative pattern of product flows is to define a different channel, one could easily reach a dozen or more such channels in any given subsector. Our approach here has been a pragmatic one, depicting in the final subsector map the most

important 3-5 channels, based on the goals of the study at hand. In some cases our evolving understanding during the course of the study has led us to define a substantially larger number of channels on an interim basis. The analytical system was then simplified and reduced as we were able to establish the relative importance of product flows through these alternative systems, focusing our analysis on the most important ones.

2.2. Subsectors and Small Enterprise Research

If there is a central implication of the subsector approach to small enterprise research, it is simply that enterprises must be understood as participants in subsectors. They are actors in their respective production/distribution systems. The recognition of this fact is not peripheral to the study of small firms, but is the starting point for such research.

Small producers participate in subsectors in two different ways: a) in production/distribution systems that are highly compressed (vertically integrated), so one producer alone can handle most if not all functions in a channel; or b) in a niche, handling one or a few functions within a more complex production/distribution channel. These two situations are discussed in turn.

Many small enterprises in third world countries today operate in very simple production/distribution channels characterized by a high degree of vertical integration. The products they make are simple, involving only a limited number of manufacturing functions, often only one. Input procurement may be similarly simplified by having the enterprise itself gather, grow or produce the needed inputs. Marketing of output, likewise, may be handled directly by the producer. Such arrangements are particularly widespread in rural areas. Producers of Egyptian dairy products provide a

clear example. Well over half the employment in small enterprises in rural areas of Egypt arises from household production of butter and cheese. This production relies on milk from the family buffalo or cow; the lady of the household converts the milk into butter and cheese, and the output is generally sold by the producer in local village markets. All functions in such a channel are handled by one household. Most are handled by only one person.[1]

For small enterprises such as these, the key issue of future prospects is dependent on the viability of such simplified arrangements in the face of competition from more complex production/distribution channels. A further question concerns the potential for these simplified arrangements to evolve in ways leading to increasing specialization and complexity. In general, an evolution towards more complex channels would involve changes whereby one or more functions are shifted out from the small producer to separate enterprises. Such an evolution brings new opportunities -- and new challenges -- of specialization by function. But the evolution to segmented, specialized systems also raises new problems of linkage, coordination, and distribution of benefits, which previously did not arise.

Small enterprises may also survive and grow by filling a niche -- performing one or more functions -- in a more complex production/distribution channel. An obvious example concerns small garment manufacturers, the dressmakers and tailors which are the largest SSE employers in many LDCs.[2] For specialized small producers such as these, the key question concerns the competitive position of the entire channel in which they participate,

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[1]See Davies et al., "Small Enterprises in Egypt."

[2]Liedholm and Mead, forthcoming.

taken as a whole, compared to alternative channels, for meeting consumer demands. This in turn will be determined by the economic efficiency with which particular functions are completed in alternative channels, as well as by the effectiveness of their linkage or coordinating mechanisms: backwards to input suppliers (purveyors of cloth, buttons, thread and so on) and forward to wholesalers, retailers or final consumers.

The particular issues raised here for small enterprise analysis are not new. They can also be found in studies of small producers which do not make use of the subsector framework. The advantage of the subsector framework, in our view, is that it brings to the forefront the central issues of small enterprise viability and future prospects by examining small producers in the context of a vertical channel in which they participate and by comparing that system to alternative channels with which they compete. This is the core of the subsector approach to small enterprise analysis.

2.3. A Comparison with Previous Research Approaches

Previous research on small enterprises has been modeled largely after pioneering survey efforts in Nigeria and the Indian subcontinent. The approach has several distinct characteristics.

- -- a heavy focus on manufacturing establishments, with relatively little attention to trade and services;
- -- data collection from small firms only;
- -- use of enumerator-administered, structured survey instruments;
- -- sampling based on stratification by geographic location, community type and industry;
- -- emphasis on measurement of quantitative internal firm characteristics such as employment, output, and profitability.

In contrast, subsector analysis specifically includes suppliers of inputs and services as well as distributors in its analytical net; it is not confined exclusively to manufacturing. Rather than limiting analysis to small enterprises alone, subsector work specifically includes evaluation of large firms that participate in the production/distribution system either as small firms' competitors, as input suppliers or as distributors. Instead of employing enumerators who administer structured survey instruments, subsector work generally requires higher level research staff capable of undertaking interactive, probing interviews. And while quantitative data may be collected in later stages of subsector work, its principal interest lies in gaining a qualitative understanding of system organization, flows and coordination mechanisms.

Classic examples of the standard pre-subsector approach to small enterprise research include studies undertaken in Bangladesh (East Pakistan Small Industries Corporation, 1963), India (Government of India, 1968), Nigeria (Kilby, 1962), the Philippines (Institute for Small Scale Industry, 1977), Taiwan (Ho, 1980), Korea (Ho, 1980), Japan (Anderson, 1982), Kenya (Kilby, 1982), Sierra Leone (Liedholm and Chuta, 1976), Jamaica (Davies, Fisseha, and Kirton, 1979), Haiti (Haggblade, Defay, and Pitman, 1979), Honduras (Stallmann and Pease, 1980), Thailand (Mead and Charsombut, 1980; Mead and Meyer, 1981), and Egypt (Badr et al., 1982, and Davies et al., 1984).

Based on sound research methodology, such studies have made several important contributions to development work. They have helped to fill a major information void by providing solid statistical information on the extent, composition and general characteristics of small manufacturing enterprises. In doing so, this work has demonstrated convincingly the

aggregate importance of small enterprises to employment and value added in a host of developing countries. This work also addressed head on one of the key questions of the 1950's, 60's and 70's: whether small firms were efficient and therefore worth promoting at all. Much of the micro data collection and static efficiency analysis has shown that in a range of consumer goods industries -- such as garment manufacture, furniture, metal work -- small firms are not only technically efficient; but when inputs are valued at economic prices, small-scale or intermediate technologies are often economically efficient as well (White, Chuta and Liedholm). This work was instrumental in laying to rest the capital-biased conventional wisdom of earlier times and in generating renewed enthusiasm in the 1970's and 80's for small enterprise promotion as a strategy for generating both high employment and maximum output. A final important output of this small enterprise research has been the identification of common macro policy distortions -- overvalued exchange rates, low controlled interest rates, tariff structures, and investment code provisions -- which appear to discriminate consistently against small enterprises, leading to allocative inefficiencies, lower employment and a more skewed income distribution than would prevail in a neutral policy environment.

While the standard "descriptive census, static micro" approach to small enterprise research has made several important contributions, it is not without shortcomings. First, past work has been limited in its ability to identify key policy and project interventions, many of which can only be uncovered by a focus on the input supply and output distribution linkages associated with individual commodity subsectors. The case studies that follow provide examples of important policy interventions that can be identified through subsector analysis but which would be missed by the

standard approach with its focus only on the manufacturing segment of the subsectors.

In addition, the standard focus on internal firm characteristics and profitability reveals only a small part of the dynamics that are at work. This is so because many small producers' strategies for survival take the form of organizational arrangements that are not seen when research is focused on internal quantitative variables. For example, small firms often handle problems such as uncertain demand, sparse information, low profit margins or low factor mobility by negotiating agreements with customers or input suppliers or by incorporating into their own firm multiple functions such as retailing or input producement. All of these coordinating mechanisms represent strategies for survival that are not captured by measurement of internal quantitative variables. Understanding which strategies work for small firms, through subsector research, helps identify factors critical for small firm success. These are often just the arrangements that policy makers need to identify as possible intervention points.

In addition to missing key policy and project interventions, past data collection has sometimes been less cost-effective and less accurate than it could have been if organized in concert with subsector analysis. Since many small producers are grouped in clusters for marketing, raw material supply or historical reasons, population estimates based on the standard area sampling can lead to serious under- or over-estimation of numbers of producers. By understanding the subsector initially, risks of this error can be moderated substantially.

Furthermore, by looking at the full range of participants in a subsector, one can often greatly improve the accuracy of global population

estimates of output, employment and incomes. This is because the subsector approach looks at input supply as well as output distribution channels. Such an approach often reveals nodes, points in the subsector at which large volumes pass through the hands of a very few actors. By allocating research resources to obtain careful quantitative estimates from these nodes, we have found it possible to make population estimates at other levels in the system with considerable accuracy and at very low cost because sample sizes can be reduced significantly. In the sorghum beer case study, for example, maltsters (input suppliers) provided such a small numbers funnel; and in the Egyptian garment subsector, cloth wholesalers served the same function.

Subsector research also focuses on information that is less sensitive than the wage bill and profit information sought in the standard quantitative micro surveys; so for a given research budget, subsector work will generally be able to generate more accurate information on what it sets out to collect. Of course, for certain purposes there is no substitute for internal technical coefficients. What we are suggesting is that when research budgets are limited, analysts should give priority to subsector work, to be undertaken early in the research activity, both because it provides key insights not supplied by the current standard procedures and also because it improves the quality of the quantitative information that is collected.

3. CASE STUDIES

We have made use of the subsector approach in the analysis of small enterprises in a number of different countries and for a variety of products. What follows is an illustration of the approach drawing on five of these studies.

3.1. Home-brewed Sorghum Beer in Botswana[1]

In Botswana, the sorghum beer subsector was singled out for study primarily because of its substantial employment and income distribution contributions. About 14% of Botswana's work force earns some income from sorghum beer brewing or retailing. Even though much of the activity is seasonal and part-time, it is especially prevalent in rural areas, where it accounts for 60% of rural manufacturing income. Middle and low-income households, especially those that are female-headed, are relatively more dependent on sorghum beer income.

In carrying out the study, the principal researcher engaged in six months of investigation in the field. This was supplemented by two months of enumerator assistance with focused data collection in the later stages of field work.

The results of the investigation are summarized by the subsector map in Figure 2, which identifies three major functions in Botswana's sorghum beer subsector: the malting, brewing, and retailing functions. Although crop production could have been included as a fourth function, for purposes of this study the subsector boundary was defined to exclude it. Since all producers and maltsters procure grain on the same free market, including

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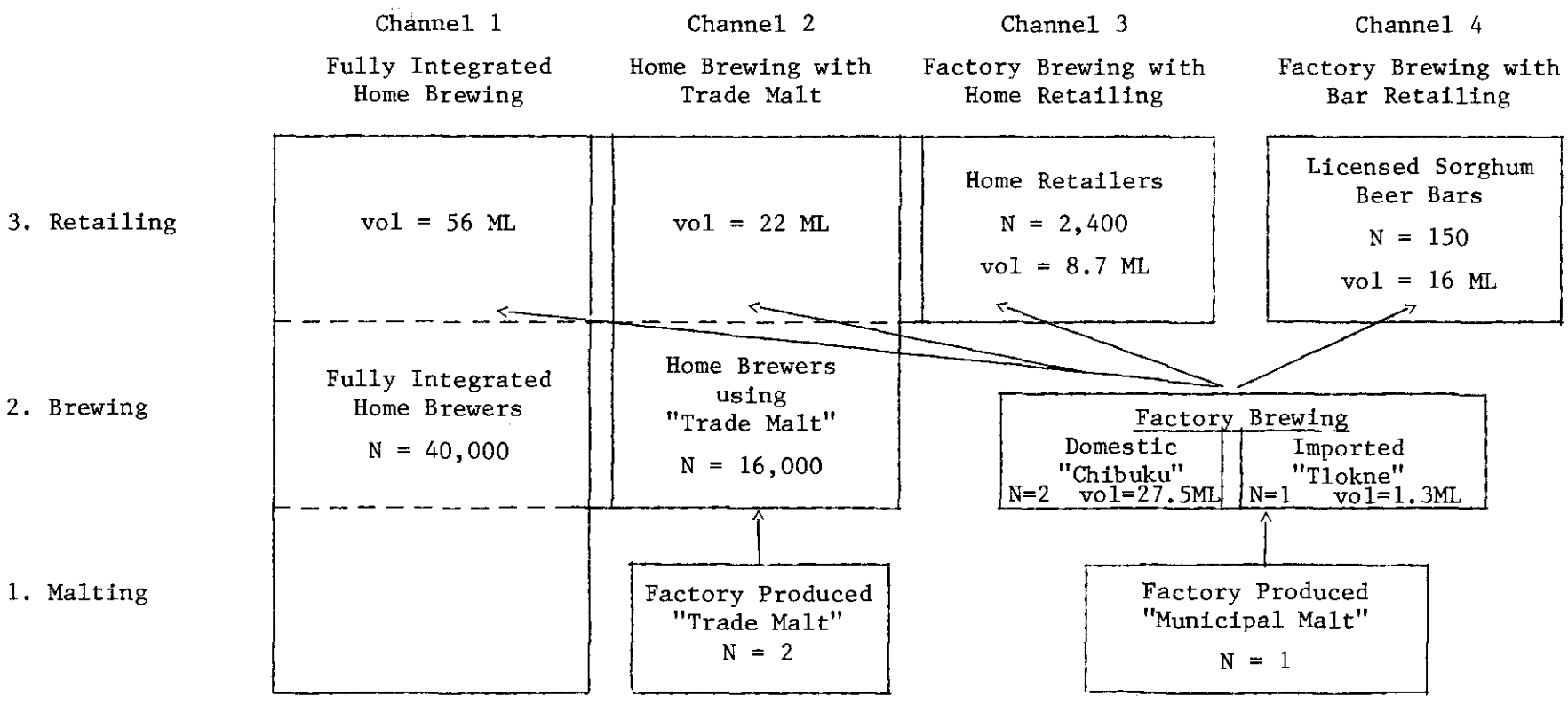
[1]This case study is drawn from Haggblade, 1984.

Figure 2: Botswana's Sorghum Beer Subsector, 1982



Legend:

= Enterprise Boundary

- - - - - = Division between functions within a firm

= Firms using identical technology for a given function

↑ = Sale of Goods in spot markets

N = Number of firms

vol = annual volume in millions of liters (ML)

grain production and marketing would have furnished no important additional insights into system dynamics or performance.

There are several types of participants in the sorghum beer subsector. Looking first at a cross-section through the brewing function, we see that tens of thousands of home brewers and two large factories operate in Botswana. In addition, a small amount of factory brew is imported from South Africa. Among the home brewers, about 75% are fully integrated forward and back; they make their own malt and retail their own beer. The remaining home brewers have integrated to the extent they retail their own output; but rather than producing their own malt, they purchase "trade" malt produced in local factories. Botswana also houses several thousand home retailers who sell factory brews, either locally made Chibuku or the imported Tlokwe brand. Some 150 licensed retailers also sell the factory-brewed brands of sorghum beer. Aside from the home brewers' vertical integration, all coordination is achieved through spot markets.

Four major production/distribution channels emerge from this collection of functions, participants and coordinating mechanisms (see Figure 2). Fifty-five percent of all sorghum beer is sold by the fully integrated home brewers, while home brewers purchasing trade malt supply an additional 20%. Factory brewers selling through home retailers account for another 9%, with factory brewers retailing through licensed bars dispensing the final 16% of all sorghum beer sold.

The dynamics of the sorghum beer subsector are particularly interesting. Evidence from factory brewers, trade maltsters and home brewers all indicates that, although the home-based enterprises currently produce the majority of sorghum beer sold, they are rapidly losing their market share in the face of competition from factory brews. In understanding why this

is so, retailing emerges as particularly important, because marketing strategies have an overwhelming impact on consumers' choices between different sources of supply. The shift to factory brew is driven not by price comparisons. While unpackaged home and factory brews retail for about the same price, consumers -- especially the young -- clamor for the factory-brewed sorghum beer that is fancily packaged and sold at a substantially higher price. Neither is the move to factory brews the result of sanitary or taste comparisons -- at least so the expert tasters claim! Rather, it is the prestige attached to the modern red-white-and-blue factory cartons that drives the growth of factory brewing.

Analysis of the employment structure of the subsector makes it clear that a continuing increase in factory brewing would imply sharply reduced levels of total employment. In fact, a move to total reliance on factory brew would result in a net loss of 50,000 part or full time employment opportunities. Such a shift to factory production would also imply a modest reduction in gross domestic product, because the large quantity of imported inputs in factory production leads to lower local value added in factory brewing channels than in those centered around home brewing. In addition to the decline in national income, the continuing shift to factory brewing is resulting in a significant redistribution of income: from rural areas to the towns and from the low- and medium-income home brewers and home retailers to the very wealthy factory brewers and licensed retailers. Retailing patterns are of considerable importance, partly because a significant share of the subsector income is earned at the retailing level. Since licensed retailers come from the most affluent income groups in the country, their control of 70% of the factory brew retailing contributes strongly to an increasingly skewed income

distribution. Channel 2, home brewing with trade malt, is a particularly profitable channel for both brewers and the country, since use of trade malt significantly raises the efficiency of home brewers, increasing their incomes and at the same time reducing the amount of grain and malt required for brewing.

A number of policy implications flow from this analysis. Perhaps the most important of these are aimed at strengthening the position of home brewers relative to the factory suppliers: increasing the supply of trade malt, and encouraging home brewers to use this input in order to lower costs and raise returns; exploring more creative marketing practices of home brew, attempting to counter the image preference currently accorded to factory production; regulating the rate of expansion of new factories, limiting them to areas which would otherwise be served by sorghum beer imported from South Africa.

Drawing on the results of the subsector study, Botswana's Ministry of Commerce and Industry took action on all these fronts. First, they moved to increase the volume of factory brew sold through home retailers, an intervention that had the advantage of directly increasing home brewer income as well as making it possible for them to monitor the competitive position of their own home brews. The critical point of intervention was identified through interviews with key participants in the subsector, interviews which revealed that the large proportion of factory brew sold by licensed bars was in part due to license holders pressuring uninformed Council licensing officers into harassment of home retailers who sold factory brews. By pointing out to the licensing officers that home retailers had a legal right to retail factory-brewed sorghum beer without a license, representatives of the Ministry of Commerce and Industry were

able to stop the harassment of home retailers, thereby increasing the proportion of factory brew handled by these retailers and considerably improving income distribution, all at very low cost.

Second, the Ministry took direct action to limit the expansion of factory brewing, at least temporarily. They placed a temporary moratorium on the issuance of factory brewing licenses pending further investigation of its economic impact. One option involves using licensing legislation to limit the expansion of factories to areas which would in any case be supplied by imported South African factory brews.

Finally, working primarily through trade maltsters, the Ministry began promoting the increased use of trade malt among home brewers. This move not only increases home brewer incomes but also significantly reduces the amount of grain required in brewing. Since approximately 19% of all grain in the country is consumed in the form of sorghum beer, this increased efficiency in input use should have a significant impact on grain import bills, helping the country reduce the size of its substantial grain deficit.

3.2. Provincial Furniture Producers in Thailand[1]

This study addressed several closely related objectives: to evaluate the performance of the furniture subsector in rural northeastern Thailand; to examine the forces affecting system dynamics; to assess the growth potential of small scale rural furniture makers within that competitive nexus; and to identify possible policy and project interventions. Both

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[1]See Boomgard, 1983.

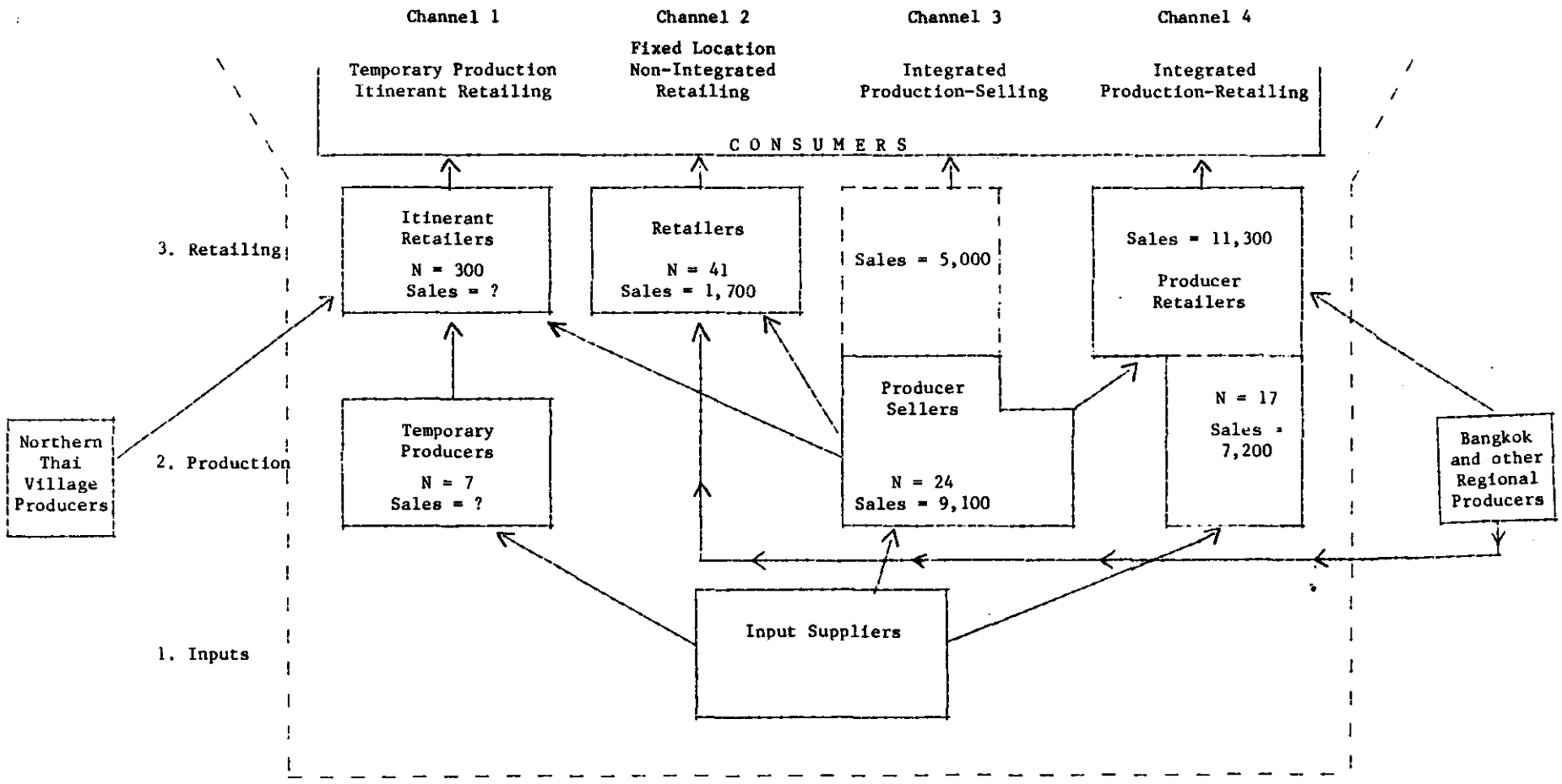
USAID and the Thai Government were interested in the policy and project implications of the research.

Researchers selected the furniture subsector for in-depth study because it was one of the largest employers among Thai small enterprises, the overall industry appeared to be growing rapidly, and the future role of small producers was unclear given an apparently increasing tendency for large Bangkok producers to contest domestic upcountry markets.

The study entailed three months of subsector work building on a two-year conventional small enterprise research project. The parent study followed the common small enterprise research format. It included a Phase I sample census followed by a very detailed, year-long Phase II collection of firm-level quantitative measures of profitability, technical coefficients, financial flows and entrepreneurial profiles. In the course of the subsector investigation, it became clear that the usefulness and accuracy of the Phase II data collection could have been considerably improved had it been preceeded by subsector work and more carefully targeted on the basis of that analysis.

Figure 3 displays the subsector map for furniture production and distribution in one province (Khon Kaen) in northeastern Thailand. It identifies three principal functions: input supply, production and retailing. The figure delineates four major distribution channels within the province. The largest of these (Channel 4) is dominated by the producer/retailers who make furniture but also sell in their retail stores products which they buy either from other local producers or from manufacturers in Bangkok. The second largest, Channel 3, includes producers who do not have retail outlets of this type but operate their production activities on a permanent, year-round basis, selling either

Figure 3. Furniture Subsector, Khon Kaen Province, Northeast Thailand, 1980



N = number of firms

Sales in thousands of baht (20 baht = US $ 1)

through others or directly to final consumers. A third channel includes the specialized, fixed location retailers who are not vertically integrated into production but rather market the output of specialized producers, both within and from outside the region. The fourth channel in the province is made up of temporary producers who move into the province on a seasonal basis establishing workshops and then marketing their output through itinerant retailers.

The temporary producers and itinerant retailers illustrate the ease with which one can miss key participants in the system. The temporary producers are skilled furniture makers from northern Thailand who migrate seasonally to areas where both markets and materials are available. Similarly, many of the itinerant merchants who drive from village to village with pick-up truck loads of furniture come from outside the province. It is easy to overlook each of these groups in studying the subsector. The researcher will have to be open for such surprises, refining his or her understanding of the subsector as new information surfaces.

A key question arising from this study concerns the decision to draw the boundary of the analysis partially in geographical terms, focusing only on one province. Several factors influenced the decision to partition the analytical unit geographically. First, the provincial market in the study area was reasonably distinct, both because of the types of products consumed and because transport costs led to some separation of markets. Second, large regional firms and those in Bangkok were fairly well captured by the government statistical net, whereas information on the regional firms was very much weaker. So with the time available for the study, it appeared most sensible to focus analytical resources on the rural areas in

order to understand better the position of the rural firms which, because of a concern with balanced regional growth, were particularly important in the planners' eyes. Of course the products brought in from the outside were taken into account, but they were treated as imports into the rural production/distribution system.

In exploring the competitive dynamics of the provincial furniture subsector, several conclusions emerge. The first concerns the important impact which the policy environment can have on subsector structure and operation. Recent changes in teak processing and distribution regulations have reduced the locational advantages of up-country producers and have boosted the competitive position of Bangkok producers. Second, it became clear that the structure of demand has been critically important in shaping the growth of the furniture market. Because there are substantial differences in product qualities, production is targeted for tastes and income levels of different consumers. Future prospects for small producers thus hinge of their ability to adapt to changes in the composition of demand as rural incomes rise.

Further exploration of the competitive dynamics of the subsector reveals the strategic position occupied by producer/retailers. Their mode of operation makes it possible for them to offer a wide range of products to their customers while specializing in a narrow set in their own production activities. Links with finished product suppliers give them new ideas about styles, product types, and prices. On that basis, they are able to monitor changing patterns of demand and determine whether there are particular product lines which they can produce more cheaply themselves rather than buying from outside. In terms of information links, marketing

strategies and opportunities for specialization in production, this turns out to be a strategic competitive pattern of operation.

Several policy and project recommendations emerge from this analysis. First, the continued viability of rural producers will hinge crucially on their ability to tailor product quality to local demands, in order to compete successfully with imports from Bangkok and other major cities. Technical training for workers and managers will be important, and regional financial institutions will have to be bolstered if rural producers are to have access to the funds necessary for them to modernize. Marketing assistance, too, would permit the small rural producers to better adapt competitive strategies in their changing environment. The producer/sellers should be strongly advised to expand into producer/retailing to capture the strategic advantages which that position implies. Management assistance or seminars would be helpful in pointing them in that direction.

3.3. Garments in Egypt[1]

Textile subsectors can be difficult to analyze because of the many steps from the raw material to the consumer; because of the ease with which different sized firms can compete in quite different markets; and because of product differentiation under the shadow of changing fashions which makes cost comparisons difficult. This study, based on two years of field work, is an attempt to capture the essential features of such a complex subsector.

In this analysis, cotton growing as well as ginning and spinning functions are left out because all cotton is spun in public sector firms,

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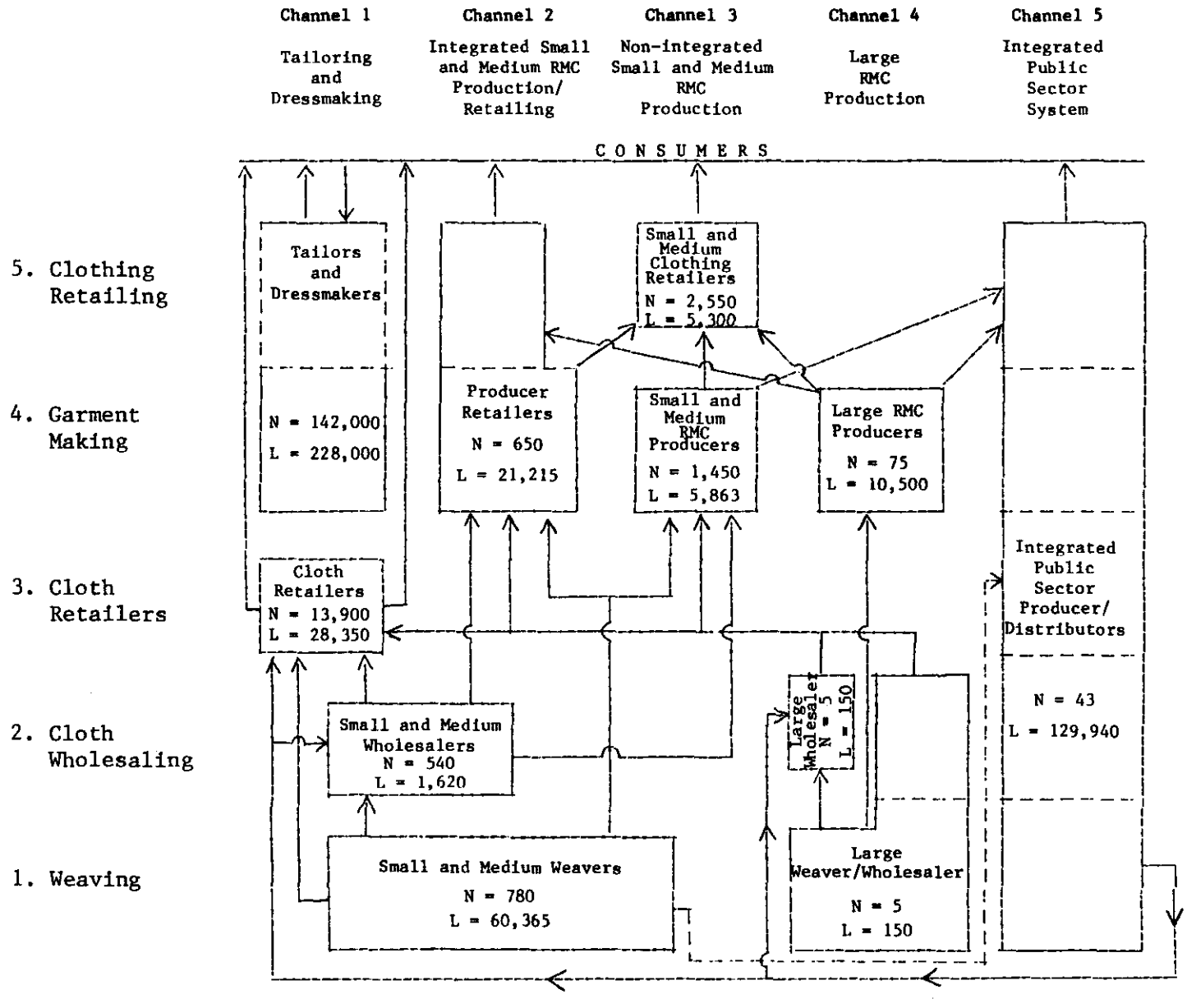
[1]See Davies, forthcoming.

so the channels above spinning are all affected similarly by the activities at that stage and below. Thus, the functions included in the analysis begin with weaving the cloth and end with retailing to the final consumer. All are shown in the left hand column of Figure 4. An unusual part of this presentation is the inclusion of two different retailing functions, one of which is the retailing of cloth, and the other of clothing.

Several interesting points emerge from looking at the participants. The first is that fully one-third of the total employment in this subsector is found in tailoring and dressmaking firms. If a comparison is to be made between small and large firms, the additional employment in small weavers, wholesalers, and ready-made clothing producers should be added to that in tailoring. With these functions added, small firms represent 45% of the employment in the subsector. The importance of small firms is further highlighted by statistics of volume of cloth utilized and value added at different stages. Approximately two-thirds of the total cloth sold in the country is sold as piece goods by cloth retailers, much of which is ultimately fashioned by the small tailoring and dressmaking firms; about half of the value added of that product flow was produced in the tailoring stage.

The predominant form of coordination for the lower stages is informal contracting, where stable, long-term business relationships exist between suppliers, producers and distributors. This is required because of the extensive variety of product types and qualities which must be negotiated, the importance of timing, and the difficulty of inspection of the product. Coordination mechanisms between consumers and tailors are different from those used between consumers and retailers of ready-made garments. The former relationship is one of individual negotiation, while the latter is

Figure 4. Textile and Garment Subsector, Egypt, 1979



N=number of firms; L=number of employees; RMC= ready-made clothing; - - → = subcontract sales

through a posted-price market. The garment retailer-consumer relationship is more closely integrated into a unified market, mainly because of the transparency of prices.

The channels have been specified with a number of different variables in mind. The first is legal status, which separates the four private sector channels from the public sector channel. The importance of this distinction emerged from an examination of the environment, particularly the rules and regulations that affect the firm activities. Since more than half of the inputs in most functions go through the relatively few public sector firms, it is clear that the decisions of the public sector are a central influence on the future of the tailors and dressmakers.

The second major differentiation between channels was in terms of the sequence of activities performed. Of particular note are the functions which are skipped in different channels. In the tailoring channel, clothing retailing is skipped, being performed by the tailor in a much reduced form. In the large ready-made clothing channel, on the other hand, both cloth retailing and wholesaling functions are left out, since the large ready-made clothing firms work directly with the weavers. The research compared the efficiency of different channels, first function by function, then taking the channel as a whole.

This study illustrates the importance of considering variables such as value added or efficiency of resource use throughout the vertical transformation. Tracing the cloth through the tailoring channel versus ready-made clothing channels showed that the latter was a more efficient user of cloth by about 10-15%. Similarly, economic analyses using the opportunity cost of inputs through the system were done to analyze the net requirements for different forms of capital and labor, raw material usage, and several

other measures of performance. They indicate that one of the drawbacks of moving to a system dominated by ready-made garment producers is that the space required for clothing retailing would expand substantially. The space required for new garment manufacturing facilities would also have a very high opportunity cost because it would require land with many other uses, while production in the tailoring system, which is often done within existing homes, requires more space but with a much lower opportunity cost. This is quite significant in a country like Egypt with a great shortage of urban space.

The central dynamic feature of the system is the perceived transition from a system dominated by the channel utilizing tailors and dressmakers working on order to ones centered around ready-made garment production done by medium and large scale firms. This transition is being driven in part by efficiency considerations, especially at some of the stages where scale economies exist; in part by consumer preference for "progressive" clothing purchased as ready-made articles; and in part by the location of control over this transition by public sector retailers of cloth as well as clothing. A negative equity impact is probable in this transition in that income from production and distribution will move to urban areas and towards those with higher incomes. A more subtle impact derives from the nature of the coordination mechanisms. The tailoring markets are competitive within local areas, but barriers exist between localities, for a variety of reasons. This market separation means that the local demand has a major effect on the price and returns to tailors. Both prices and returns are lower in the rural areas. A movement to ready-made garments might lower the average price as garments are produced in a larger market,

but prices in rural areas are likely to go up while the rural population is also experiencing the loss of tailoring and dressmaking income.

This is not to say that this transition is inevitable. Given the pivotal position of public sector retailers, a major policy proposal is that they acknowledge the high opportunity cost of space and the negative equity impacts of the transition, thus limiting their inclination to direct the system more towards ready-made garments. A project is also under consideration to direct the cloth subsidy program, which accounts for 30% of the total cloth utilization, through tailors and dressmakers rather than through retailers. If constructed properly, such a project could reduce the inefficiencies of tailors in cloth usage and maintain their efficient utilization of space, capture some of the economies of scale in wholesaling, and experiment with a possibly viable alternative form of retailing, suitable for a land scarce society.

3.4. Shrimp in Central Java, Indonesia[1]

The first three case studies discussed were drawn from doctoral dissertations; they represent part of the output of many-month-long studies of the subsectors in question. The next two each represent much briefer exercises. The first of these was focused on the shrimp industry in Central Java. Figure 5 represents the results of about three weeks' work. Its main goal was to clarify the relationships among different stages of production and distribution in the supply of shrimp for export, and the constraints hindering the expansion of the industry. The figure illustrates the complexity of these production and distribution relationships and the

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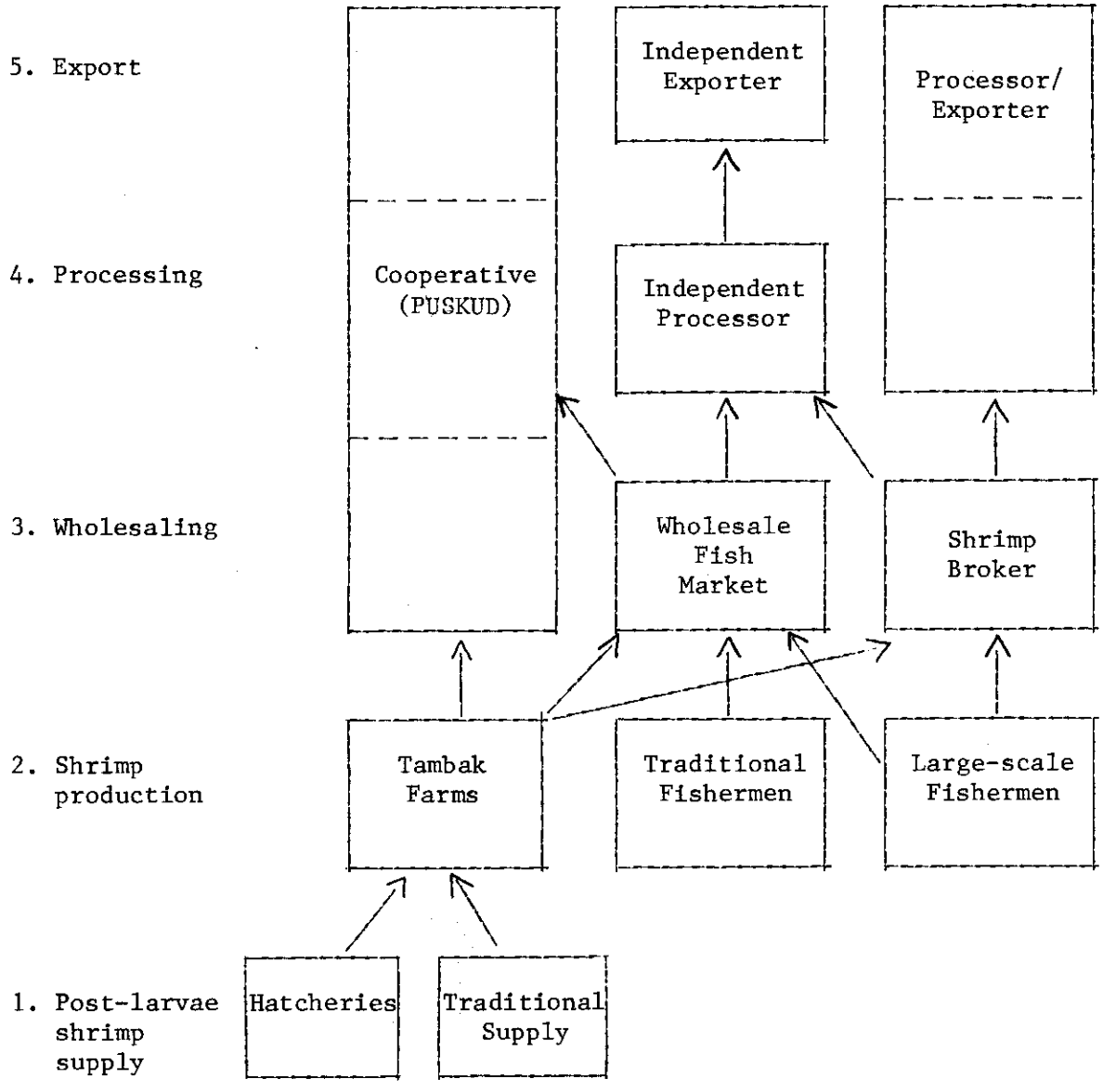
[1]See Central Java Enterprise Development Project, 1983.

Figure 5. Shrimp Export Subsector, Central Java, 1983



need for effective coordination among a number of different participants if the system is to expand.

In the course of the study, three problem areas were identified: the supply of post-larvae shrimp from hatcheries; production techniques in "tambak" fish ponds; and the coordinating mechanisms in the system, particularly as these relate to quality control. It was recognized that for the subsector to be able to respond to large and growing export markets, improvements would be needed on each front. The subsector study was instrumental in the formulation of a project, currently being implemented, to deal with these problem areas.

3.5. Batik Cloth Production in Central Java, Indonesia[1]

In the first four case studies, the subsector maps showed -- in varying degrees of detail -- the major functions and the different categories of participants in each of the subsectors under examination. Our last example is based on an even briefer time in the field, approximately one week out of a three and a half week consultancy dealing with selected aspects of this and two other subsectors. Although it studied functions and participants, it focused more explicitly on questions of coordinating links between different participants. In particular, it explored the ways in which small household-based producers can participate in more complex production/distribution channels through subcontracting arrangements whereby some or all of the functions in the production process are done on a contractual basis either for larger producers or for merchants. As indicated by the different types of arrows joining the

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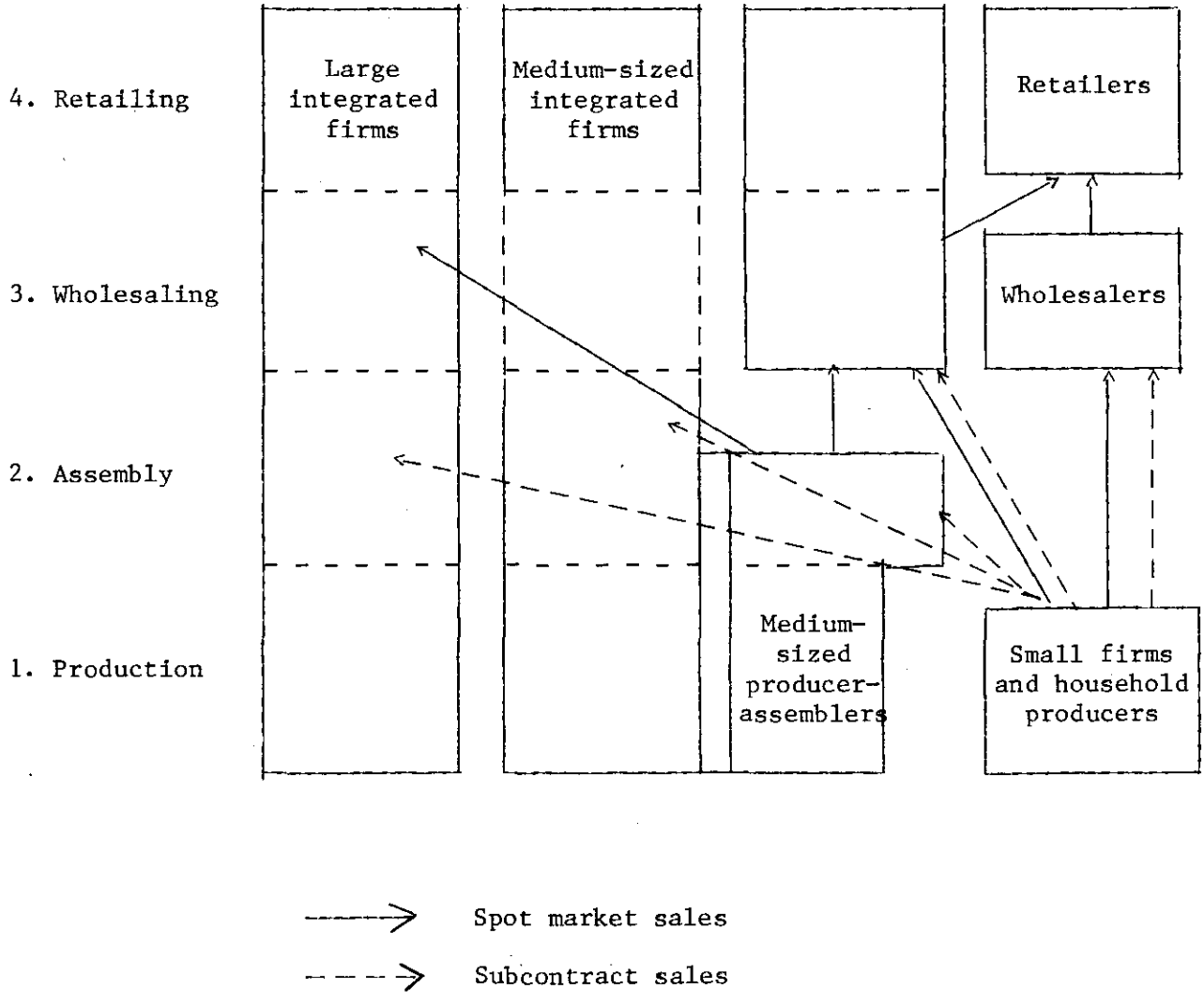
[1] See Mead, 1983.

Figure 6. Batik Subsector in Central Java, 1983



participants in this subsector map, product sales were in some cases handled by spot market transactions (for example, sales of finished products to retailers or wholesalers). In other cases, orders were placed with small enterprises, thereby enabling these small producers to concentrate on a more limited range of production activities, leaving the input procurement, product marketing, and (sometimes) product design to the larger firms giving the orders. The report from which this figure is drawn explored relative advantages of alternative patterns of specialization along these lines and of alternative linkage mechanisms between participants. It suggested policies for encouraging subcontracting systems (e.g., by expanded use of the government's "foster parent" designation), as a way of encouraging production among small, household-based producers, thereby allowing women to combine home duties with part-time income-earning opportunities.

4. THE CONDUCT OF SUBSECTOR RESEARCH FOR SMALL ENTERPRISE DEVELOPMENT

The case studies just reviewed represent initial attempts to use the subsector approach to produce policy- and project-relevant small enterprise research. In the course of these efforts, we engaged in a substantial amount of empirical and methodological experimentation. In this section, we synthesize and consolidate what we have learned concerning the conduct of such research. After outlining the situations in which subsector research has proven to be most useful, we suggest a seven-step procedure to guide this type of analysis.

While the subsector approach does not provide a universal answer to all problems of small enterprise research, we believe that most studies in this area will benefit from an injection of the subsector perspective. The approach is particularly well suited to exploring the following types of questions. What alternative channels are currently operating to direct raw materials through processors and on to final consumers? How are these alternative production/distribution systems changing over time? What is driving these changes? To what extent are they influenced by current policies? What is the effect of shifts among channels on employment, incomes, and income distribution? At which points in the subsector could policy makers most effectively intervene? What is the likely impact of such interventions? In sum, the subsector approach appears to be most useful when one wishes a) to understand the dynamics of a particular production/distribution system, b) to identify points for policy interventions, and/or c) to estimate and monitor the impact of those policies and projects.

In cases where such questions are of interest, we suggest a seven-step research approach. While details will vary from case to case depending on

the quality and nature of existing data and the goals and magnitude of the particular study, we have found the following steps to form a useful checklist in guiding research efforts.

1. Start with a quantitative overview of the employment and enterprise structure of the economy.
2. Select key subsectors for study.
3. Outline the basic subsector map.
4. Specify the environment in which the subsector operates.
5. Identify "overlays" along dimensions of particular interest.
6. Collect focused qualitative and quantitative information and perform analysis.
7. Identify policy and program recommendations.

Each of these steps is examined in turn.

4.1. Quantitative Overview

In order to guide subsector selection and to provide a context in which to undertake more detailed analyses, it is important to start with a broad overview of enterprises and employment by sector of activity, firm size, type, and location. Population censuses can be an important starting point here, providing a comprehensive picture of the economic activity of all residents of the country. National accounts, labor force surveys, licensing lists, and Chamber of Commerce or industry establishment surveys can provide useful and more detailed supplementary information. In the Botswana case study, for example, a very detailed income distribution survey provided the necessary economic overview. Unfortunately such data are not always available, and except for population censuses and labor force surveys, most standard macro data seriously underestimate the degree

of involvement of the labor force in small enterprises. Researchers will often find a reasonably adequate profile of firms and employment in larger commercial, manufacturing and service enterprises; but data concerning the small end of the economic spectrum will often be quite weak.

Where this is so, the analyst may find it useful to fill in gaps by performing what the standard small enterprise research has called a Phase I sample census. Both the Egyptian garment and the Thai furniture studies required such an initial sample census. As is normally the case, these investigations involved undertaking a door-to-door enumerator-administered survey designed to identify all existing small enterprises in a particular area, whether in a home or a workshop, whether registered or not. Often such a survey is based on a random sampling of localities, stratified by size of locality. The goal of this rapid survey is to provide a more solid estimate of numbers of enterprises, employment, and capital use by type of activity. It is advisable to include manufacturing, services, and commerce in this census effort. It is helpful to identify the different functions performed by a particular firm, as well as the suppliers to and types of customers buying from a particular producer. Such information substantially strengthens one's ability to see a particular enterprise in its subsector context. Some of this information can be collected along with the basic enterprise enumeration from a subsample of firms. Since Liedholm and Chuta provide a good outline of many of these survey procedures, we will not delve into them further here.[1]

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[1]Liedholm and Chuta, 1976a. See also Chuta and Liedholm.

4.2. Selection of Key Subsectors for Study

Once the researcher has a reasonably comprehensive set of data in hand, he or she is in a much better position to make an informed decision as to which subsectors are most important to study. The researcher will often be called upon to set priorities here. What criteria should be used? In general one would like to select subsectors in which the payoff to intervention appears to be the highest. Generally this means selecting from among the largest ones as well as those with the best growth prospects. Largest could be defined in terms of numbers of enterprises, employment, or perhaps income. In some cases a relatively small subsector that appears to be undergoing rapid change may offer a good potential for income expansion or employment generation. In other instances, subsectors employing key target populations may be most appropriate.

Of course, in some cases the host government, donor or small business promotion agency will have identified one or more subsectors which they feel merit particular attention. This was the case in the shrimp study in Indonesia. In this instance, a local agency commissioned a subsector study to answer specific questions about structure, dynamics, and how one could usefully intervene.

Since government economic priorities, research budgets, and other key factors will vary from place to place, the researcher will have to use judgement in singling out subsectors for attention. Some examples may help. In Botswana, the government held as key economic objectives the creation of rural employment and incomes as well as improved income distribution. The sorghum beer subsector was selected for study because it accounted for 60% of rural manufacturing income, provided income for tens of thousands of home brewers at the low end and middle of the income

distribution, among people whose livelihood appeared to be jeopardized by the recent expansion of factory brewing. Given government priorities, payoffs to applied research appeared to be high in the sorghum beer subsector. In Thailand, the furniture industry is also one of the largest. Its absolute size coupled with fear of displacement of upcountry producers by large Bangkok factories and concern for raw material availability and conservation prompted a focus on the Khon Kaen furniture subsector. In Egypt, the garment subsector was selected partly because of its large size, but also because of the widespread distribution of employment in this subsector in rural areas, and because of its potential to offer employment to women.

4.3. The Basic Subsector Map

After selecting the subsector to be studied, the researcher's first step should be to draw a basic subsector map. At the initial stage, the minimum information embodied in the subsector map will include a listing of the various functions undertaken in the subsector; a characterization of different firm types operating at each level in the subsector; and an examination of the nature of the vertical linkages among actors (degree of integration, characteristics of markets, etc.). All of this will be reflected in a schematic depiction of the alternative channels in the subsector.

In the course of drawing this basic map, the researcher will have to identify the subsector boundaries. Normally the subsector will revolve around a particular product, and will include all firms involved in raw material supply, production and distribution of that product. Of course for complex products a complete network of all agents contributing to

production and distribution of the final output could quickly resemble an input-output matrix for the entire economy. The researcher will have to use judgement in drawing the relevant boundaries. The case studies provide examples of how useful delineations have been made. The art is in being able to define a managable yet meaningful unit of analysis.

The most effective procedure for drawing the basic subsector map is to begin with open-ended interviews with key subsector participants. We have found that wholesalers, retailers and input suppliers often occupy strategic positions in subsectors and are particularly useful in outlining the major channels. They can often provide helpful information concerning product quality, supply reliability, production capacity, etc. Members of trade associations, chambers of commerce or government agencies can also often provide useful inputs.

The drawing of a subsector map is an evolving and iterative process. It generally will start with preliminary first approximations in terms of functions, participants, linkages, and channels. Further interviews may add complexity to one's understanding as new participants and channels are uncovered. It has not been unusual for us to identify important new channels after we had already been engaged in a study for some time. Presenting all of these complexities in the subsector map can result in a bewildering crisscross of lines connecting a great variety of participants in adjacent functions on the map. It is generally only at a stage beyond this that it is possible to sort out major from minor product flows, once again simplifying the map to focus on the most important channels.

4.4. The Environment

The environment in which the subsector operates can be examined by focusing on the rules that affect the firms of the subsector, and the organizations that exist to support them. With respect to rules, two varieties exist: formal rules and regulations, and informal priorities and socio-cultural structures and constraints. The regulatory apparatus as it affects output pricing and quantities, labor regulations, investment and saving, import and export procedures, and input procurement, all exert an important influence on the operation of the subsector. The effect of socio-cultural institutions will clearly be harder to identify and assess, but can be equally important in affecting the behavior of firms in the subsector.

The support organizations and programs cover a range of different groups. Trade associations, the chamber of commerce, ministerial departments, and export agencies are all possible sources of support. We also include credit and financial institutions among the support organizations. Programs might include major subsidy programs, export promotion or industrial promotion programs.

An important part of this exploration of the environment concerns the ways in which these rules and support organizations touch different channels or different firm types. Differential impacts along these lines can be quite important in explaining the relative strength of different channels; indeed, in some cases particular channels owe their very existence to a particular set of rules or regulations. In the Egyptian garment study, for example, it was found that one of the tailoring channels was largely dependent on the cloth subsidy program.

4.5. Overlays

In producing the subsector map, the researcher will have specified the basic functions, participants, and linkages, and also will have gained an idea of the relative importance of various alternative channels. We have found it preferable to avoid extensive firm-level data collection (for technical coefficients, estimates of value added, and the like) until after one is reasonably confident of having produced a subsector map that captures the essential firm types and production/distribution channels.

At this stage, then, the researcher must lay out the key analytical and empirical issues to be addressed in the study. We have found it useful to think of these in terms of a series of "overlays." In the same way that an overhead projector enables one to superimpose information onto a basic diagram, the researcher can use a simple subsector map as a foundation for exploring any of a number of different dimensions. These may relate to any of the three basic categories of subsector research: participants, functions, and linkages.

For the participants, the obvious variables of interest include employment, income levels and distribution, efficiency and returns to factors of production. These were major foci in the sorghum beer and garment studies, since employment and income generation were among the key policy objectives. To deal with this, we produced an employment overlay which described subsector flows in terms of the labor used for each function in each type of firm. In other cases, income generation is a critical concern, so the basic subsector map can be overlaid to show how value added is distributed among functions and channels throughout the subsector. A third set of issues here concerns efficiency, in terms of

output per unit of factor inputs as well as efficiency in raw material usage, which we have found to differ substantially between channels.

Linkages can also be investigated more deeply by the use of overlays. The nature of markets and of contracts can be investigated from a variety of viewpoints. Examples might include the degree of competition, the extent of subcontracting and/or longer term contracts, the mechanisms by which non-price information is transmitted, or the level and distribution of rents which accrue as a result of pricing practices. It is important to keep in mind in such investigations that both vertical and horizontal linkages affect the activities of particular groups of firms.

The investigation of participants and linkages will reveal much with regard to functions performed as well. Examining these on their own as well will help provide a more detailed understanding of the variation and potential for change in the subsector.

Overlays need not measure only quantitative flows. They can also be used to demonstrate behavioral or organizational characteristics of the subsector. The Egyptian cloth study, for example, provided an overlay showing where inventory was held throughout the subsector, how it varied among channels and what organizational arrangements were necessary under each system. Since the handling of both cloth and finished garment inventories are critical to strategies for reducing costs and remaining responsive to consumer tastes, this overlay was particularly important for understanding why certain channels were thriving while others were ebbing.

4.6. Focused Qualitative and Quantitative Data Collection

Once the researcher has identified the key analytical issues to be addressed, he or she will likely need to undertake more detailed data

collection. One can use information from a Phase I census along with a subsector map to develop a sampling frame and determine the best allocation of research resources to generate the information which is required.

Of course, not all this information will be quantitative. In cases where dynamics or organizational strategies are seen to be of central importance, these issues will need to be given particular attention. In many cases, though, basic technical coefficients and profiles of value added will be useful in order to evaluate performance in various channels and to project the impact of current trends or of policy interventions that will result in more rapid development of particular channels.

4.7. Policy and Program Implications

The analysis to this point leads to an assessment of which channels perform best according to the country's policy objectives, commonly those of efficiency, equity or employment creation. Having identified channels to be promoted, the next question is how to achieve this goal. Subsector research often points the way.

In the course of tracing out systems flows and dynamics, the analyst should be on the alert for four major flags that frequently aid in the design of policy and project interventions. Specifically, the analyst should look for: a) system blockages or bottlenecks; b) thriving channels and the forces driving their ascendancy; c) system nodes or small numbers funnels, where large volumes pass through the hands of a very few actors; and d) existing policies and programs that currently impinge on the subsector.

System bottlenecks are often identified in the course of tracing out subsector flows. Where such blockages prevent firms from participating

more fully in desirable (equitable or efficient) channels, an obvious policy option is aimed at relaxing the bottleneck. For example, the sorghum beer case study identified improper enforcement of retail legislation as impeding the flow of product through the home retailers' channel, thus resulting in reduced efficiency and employment. Government officials were able to increase product flow through that high-efficiency, high-employment channel by discussion with district council staff resulting in improved regulatory administration. Similarly, in Indonesia's shrimp subsector, analysts identified technical problems in shrimp hatcheries as a constraint to more efficient system flows. Identification of such bottlenecks allowed government staff to design projects to attack these problems and improve the performance of the subsector.

Thriving channels serve as a second useful policy flag for much the same reasons. Where ascendant channels are leading to improved economic efficiency and equity, an understanding of driving forces may pinpoint means of accelerating the shift to that channel. But just as often evaluations may prove that ascendant channels are leading to increased inefficiency and greater inequity, hence an understanding of driving forces will suggest points at which brakes can be applied to restrict and perhaps redirect the flows to other, more desirable channels. The Egyptian garment subsector provides a good example of a case when an economically inefficient channel (the retailing of ready-made garments) was on the rise because of subsidized retailing space owned by the government which, because it was not charged its opportunity cost, led public sector retailers to overinvest in inventories of ready-made garments. A recommendation for policy change was proposed, aimed at moving market prices closer to opportunity costs, thereby reducing the incentives for a

transition to ready-made garments based on subsidies. Analysis showed that slowing the growth of this channel would lead to sustained employment in small tailoring establishments as well as improved overall system efficiency. Similarly, the rise of factory brews in Botswana was leading to the rapid growth of the exceedingly inefficient and inequitable channel in which factory brew is retailed through licensed outlets. Identification of this trend allowed policy makers to take steps to control the growth of factory brew. The Thai furniture subsector offers a further example where the strategic position of producer/retailers was recognized as the key to their prosperity; technical assistance and finance was recommended to facilitate the transition to that channel by other producers in the region.

Small numbers funnels at system nodes offer a third flag that can sometimes be a key to targeting effective interventions. Subsector research often identifies points at which large volumes of product flow through the hands of a small number of actors. In many cases, wholesalers or input suppliers occupy such a position. In the sorghum beer subsector, two trade maltsters supplied malt to 15,000 home brewers, while in Egypt six public cloth retailers supplied inputs to 200,000 small tailors and dressmakers. Government officials in Botswana, by working through the maltsters to increase trade malt availability, were able indirectly to reach thousands of brewers enabling them to switch from fully-integrated own production to the far more efficient home brew/trade malting channel. Similarly, a project proposal in Egypt aims to stimulate employment by directing cloth from the few government wholesalers to thousands of tailors and dressmakers. Subcontracting systems can provide a similar opportunity, where one or a few parent firms deal with a large number of small suppliers. In Indonesia, technical assistance in the metals industry was

channeled to small enterprises participating in such subcontracting systems as suppliers to a few larger parent firms. The important feature in such cases is cost effectiveness; it may be most inexpensive to direct interventions to large numbers of small producers by channeling resources indirectly to wholesalers, input suppliers or contract buyers, where the impact of intervention can yield high multiplier effects.

The final flag, existing policies, frequently appears along with one of the other three. Subsector research regularly documents cases in which discriminatory policies lead to inefficient resource allocations, frequently at the expense of employment, equity and small enterprises. The Egyptian subsidized retailing of ready-made garments and the misenforcement of sorghum beer retail legislation in Botswana are two such examples.

In sum, while no magic formula exists that will lead automatically to policy and project identification, the four-point listing above provides a useful checklist which will often identify important interventions as well as institutions through which moves can be most effectively made.

5. CONCLUSIONS

We believe that most small enterprise work will benefit from an infusion of subsector thinking. Not only does it provide an insight into system dynamics, it also helps project the economic impact of shifts from one channel to another, and is useful in identifying key points for policy or program interventions. It can also be very valuable in guiding quantitative data collection.

Subsector research is not a replacement for small enterprise censuses and micro data collection; rather we view it as a guiding framework for that work. We recognize the importance of censuses and longitudinal data collection efforts, where these are targeted to meet particular, identified information needs. Given a limited research budget, however, we do feel that a Phase I survey followed by fairly extensive subsector research should be given a higher priority than it has previously received. The further implication is that less than perfect quantitative data collection, if given up for more subsector research, is often well worth the cost.

In our view, it is difficult to overemphasize the importance of the subsector map as a research tool. The visual representation provides a useful framework for understanding and discussing various issues concerning the subsector with participants as well as outsiders. It helps raise questions about weak points or constraints in particular channels, as well as about the comparative effectiveness and long-run viability of alternative channels.

Subsector studies require a higher caliber of researchers than do census work and micro data collection operating with standard questionnaires. The open-ended, probing kinds of questions necessary in subsector work require that the person doing the interviewing

understand the research methodology and the key issues in vertical exchange relationships, and that he or she be able to elicit the information necessary to understand the operation and dynamics of the subsector. While quantitative data gathered in a second stage may be collected by less sophisticated enumerators, the initial development of the subsector map and characterization of the major issues and flows will have to be done by more highly skilled researchers.

It is a great advantage for the researcher to be a national of the country in which the study is being done. This is true both because the national starts out far ahead in terms of his or her understanding of the society and also because the national is more likely to stay in the country, so the understanding can continue to grow and contribute to the development of the nation.

An effective way to institutionalize subsector research is through the establishment of "subsector desks" in chambers of commerce, government or other LDC institutions with an ongoing interest in economic policy. Given that situations can change quite rapidly -- due to introduction of new technology, changes in key input or output prices, or the entry of new competitors in a given market -- governments will experience a need for ongoing analysis of the situation in key subsectors. It is crucial that initial subsector work be done through local institutions so that this knowledge base is preserved and available for future reference. After an initial fixed research investment, the subsector desk could undertake periodic updates as conditions change. In this way, policy makers would have access to policy-relevant information in key subsectors on an ongoing basis.

In closing, we would like to add that although we have launched into the subsector approach from the vantage point of small enterprises research in developing countries, its applicability is by no means limited to that arena. Obviously the approach could also be used in developed countries, and for studying the performance and dynamics of medium and large-scale firms as well. In fact, one central theme of this paper is that small firms cannot be studied in isolation but only as part of an evolving system which includes not only small, medium and large-sized firms but also input suppliers and distributors as well.

The task that now awaits us is more widespread application of subsector research. After accumulating more experience and more case studies, we hope it will be possible to refine the procedural guidelines and to make some cross-section comparisons, establishing standard typologies that will facilitate analysis and application in other settings. Such studies could do much to increase the contribution of small enterprise research to the formulation of improved policies and projects, thereby strengthening the contribution of small producers to the development process.

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