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AN ECONOMIC AND SOCIAL IMPACT ANALYSIS OF SMALL INDUSTRY PROMOTION

by

Ernesto M. Pernia

ABSTRACT

Small-scale industry (SI) promotion became a prominent policy instrument in developing countries during the 70s and will probably maintain such prominence in the 80s. In the Philippines a major SI promotion program was initiated in 1974 by the Ministry of Industry. In this paper, an attempt is made to evaluate the impacts of SI promotion on various economic and social development concerns. The results of the analysis seem to lend credence to the policy of fostering small enterprises. Although some of the popular claims about their contribution to development goals may be overstated, there is an indication that public policy support for small industry development in the regions/provinces is worthwhile because it apparently makes a difference with respect to socioeconomic concerns. Intuitively, the promotion cost seems modest although, as with project benefits, it has to be compared with the costs of other government development projects. On the whole, a method that combines quantitative and qualitative survey data for economic and social impact analysis has something to recommend itself. Needless to say, the ways in which the surveys were designed and conducted for this study leave some room for improvement. Given the lessons of experience, such improvement should be gained in a next empirical application of the method suggested in this paper.

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I. INTRODUCTION

Among the development strategies that were advocated during the decade of the 70s, small-scale industry promotion was probably one of the most heralded. This was essentially a reaction to the post-war industrialization policy in many developing countries which tended to exacerbate the problems of unemployment and inequitable income distribution. A new ray of hope was seen in small-scale industry in seeking solutions to these problems.

The continuing popularity of small-scale industry (SI)[1] promotion as a government policy stems from the following assumptions: (a) SI is labor-intensive and is therefore ideal for labor-abundant and capital-scarce countries; (b) it absorbs unskilled labor as well as female labor; (c) SI increases the incomes of poor families and thus improves income distribution; and (d) it helps promote rural and regional development to the extent that it can make do without the

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*Professor of Economics, University of the Philippines School of Economics. The paper is a revised and shorter version of an earlier report submitted to the Philippine Institute for Development Studies. It has benefited from comments and suggestions made by Professor Robert E. Evenson as well as from those offered by colleagues at the UPSE Seminar. I am solely responsible, however, for any remaining deficiencies. I acknowledge the able programming assistance provided by Ariane Chipongian and skillful typing by Fely Galaites.

[1]In this paper, SI is used to subsume several small-scale enterprises (SEs); the acronyms SI and SEs are thus used interchangeably.

advantages of agglomeration and urbanization economies. Given these expectations, a study of the impacts of SI promotion on development concerns may generate some useful insights for policy.

This paper attempts to examine the effects of SI promotion on economic and social development concerns.[2] Of particular interest is the Philippine government's effort to promote small-scale enterprises and the consequent economic and social impacts. A perspective on small-scale industry in the Philippines and on the government's SI program is first presented. This is followed by theoretical considerations, and then the method of analysis covering the data and statistical specifications. A discussion of the empirical results and some concluding remarks round out the paper.

II. SMALL-SCALE INDUSTRY IN PERSPECTIVE

Cottage enterprises (1-4 workers) accounted for a little over three-quarters of the total number of manufacturing establishments in the Philippines in 1975, and small enterprises (5-99 workers) made up over one-fifth of the total. The pattern was virtually the same in 1967. The two types of enterprises together constituted close to 99 percent of all establishments in both periods. Furthermore, over the eight-year period cottage types grew 69 percent and the

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[2] As originally planned for the research project, these concerns included employment, production/productivity, income/income distribution, population/fertility, education, health, nutrition, participation, energy, and environment.

small ones increased 84 percent (both together at 72 percent) -- overshadowing the growth rates of medium and large industries (Table 1). Thus, small enterprises ("cottage" and "small" types combined) play quite a dominant role in the country's manufacturing sector, and this is particularly true in the provinces.[3]

As regards employment, small enterprises (SEs -- referring to cottage and small establishments henceforth) contributed some 41 percent in 1967 and 46 percent in 1975. The contribution of medium enterprises (MEs) stood at about 7.5 percent during the interval while that of large enterprises (LEs) fell from 52 to 46 percent. Over the eight-year period SEs registered a growth rate in employment of around 57 percent compared to about 47 and 23 percent for MEs and LEs, respectively. The average for all size classes was roughly 39 percent (Table 1).

When it comes to production, however, the picture becomes pathetic for SEs. The share in value-added of SEs dropped from 27 percent in 1967 to 15 percent in 1975, reflecting an absolute decline in output of 77 percent. By contrast, MEs registered an amazing output growth of 139 percent, with output share rising from 8 to 18 percent. LEs, on the other hand, exhibited a modest growth performance

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[3] The focus of the study is on small enterprises (technically cottage and small) rather than on "small" and "medium" because "medium" establishments are relatively insignificant, especially outside big cities.

Table 1. Number of Manufacturing Establishments, Employment and Value-Added in Small, Medium and Large Industries, Philippines 1967 and 1975.

Establishment by Size*	1967	(% Share)		1975	(% Share)		% Growth Rate	
	A. Number of Establishments							
Cottage	34,995	(77.8)	98.6	59,251	(76.6)	98.8	69.3	72.3
Small	9,343	(20.8)		17,153	(22.2)		83.6	
Medium	278	(0.6)		401	(0.5)		44.2	
Large	384	(0.8)		486	(0.6)		26.6	
TOTAL	45,000	(100.0)		77,291	(100.0)		71.8	
	B. Employment							
Cottage	85,083	(16.4)	41.0	121,832	(16.9)	46.3	43.2	56.6
Small	127,529	(24.6)		211,186	(29.4)		65.6	
Medium	38,407	(7.4)		56,371	(7.8)		46.8	
Large	267,685	(51.6)		329,625	(45.9)		23.1	
TOTAL	518,704	(100.0)		719,014	(100.0)		38.6	
	C. Census Value-Added (₱000 at 1965 prices)							
Cottage	111,870	(1.8)	27.4	113,983	(1.8)	15.0	1.9	-77.0
Small	1,571,344	(25.6)		836,759	(13.2)		-87.8	
Medium	482,138	(7.8)		1,154,861	(18.3)		139.5	
Large	3,978,858	(64.8)		4,219,054	(66.7)		6.0	
TOTAL	6,144,210	(100.0)		6,324,657	(100.0)		2.9	

*Cottage refers to establishments with 1-4 workers, small, 5-9 workers, medium, 100-199, and large, 200+ workers. References to small enterprises in the text concern cottage and small establishments combined.

Note: More recent data were still being revised at the time of writing this paper.

Source: NCSO, Census of Establishments.

of 6 percent, with value-added share steady at around 66 percent during the period (Table 1).

In terms of labor intensity, small enterprises evidently use less capital per worker than do medium and large firms. Capital-labor ratio rises monotonically with size of establishment as shown in Table 2. SEs use roughly ₱7,500 worth of capital per worker compared to ₱19,700 for MEs and ₱25,800 for LEs. Putting it differently, the capital intensity of SEs is only about 29 percent of that of LEs while it is 76 percent for MEs.

Table 2. Capital-Labor Ratios by Establishment Size, 1974

Establishment Size	Capital*/Labor (₱000/worker)		Relative Ratios (200+ = 100)	
1-4	1.4	7.5	5	29
5-19	4.7		18	
20-49	8.7		34	
50-99	15.2		59	
100-199	19.7		76	
200+	25.8		100	

*Based on book value of fixed assets.

Source: Anderson and Khambata (1981:154) from NCSO and NACIDA.

In light of the above considerations, namely, the dominance of SEs in terms of number of establishments and their significant contribution to employment but depressed output performance, the government has seen fit to provide assistance for the development of the small industry sub-sector. Another rationale for government intervention is the potential of this sub-sector in helping promote regional and rural development as well as better income distribution.

Overview of the SI Program

The Philippine government's effort to foster small-scale enterprises used to revolve around the Ministry of Industry's Medium and Small Industries Coordinated Action Program (MASICAP) and Small Business Advisory Centers (SBAC). The MASICAP was a brain child of the Development Academy of the Philippines (DAP) in late 1973. When the Department of Industry (now Ministry of Trade and Industry) was created in the middle of 1974, MASICAP was absorbed to become the functional arm in the promotion of small- and medium-scale industries. MASICAP was envisioned to bridge the gap between financial institutions and small entrepreneurs in the provinces.

There were about 50 MASICAP teams (150 field personnel) distributed all over the country, excluding Metro Manila, in 1980. Since 1973, MASICAP teams had assisted many and varied enterprises, new as well as existing ones, for a cumulative total of 7,403 projects. Of this total, however, only 2,944 projects had been approved as of

30 June 1980. Industrial activities included a wide range, from "balut" and noodle processing, to guitar and furniture making, to machine shops, and to mining and quarrying.

The SBAC component of the SI program was initiated in July 1975 for the purpose of providing post-loan assistance to MASICAP-assisted projects as well as to other enterprises in need of technical assistance. It became apparent that the problems of small and medium businesses do not end with the availment of loans; these enterprises need a "follow-through" until they reach some degree of maturity.

There was an SBAC in each of the 11 regions (located in the regional capital) outside Metro Manila, with 242 field staff in 1980. Advice and assistance were given on matters of finance, management, production, marketing, inventory, integrated plant survey, etc. As of mid-1980, a total of 1,578 small and medium enterprises had availed themselves of referral, information service and consultation or what was known as RISC for short.

Program Inputs

The inputs of the SI program can be classified as direct and indirect. Direct inputs were the technical assistance and financial subsidies given to SI clients. Technical assistance was in the form of free service given by the MASICAP in the preparation of project

feasibility studies. The clients likewise availed themselves of financial subsidies from the Industrial Guarantee and Loan Fund (IGLF) of the Central Bank and from the Development Bank of the Philippines (DBP). IGLF and DBP loans, channeled through DBP branches, rural banks and some commercial banks, carried interest rates appreciably lower than the market rates -- about 14 percent versus 20 percent. Projects accepted for IGLF or DBP funding entailed a considerably shorter waiting time before approval and release of funds than through regular funding sources. This time difference can be considered an intangible input from MASICAP's standpoint or benefit on the part of the clients. Additional direct inputs were furnished by the SBAC in the form of post-loan advice and assistance to SEs. Indirect inputs were administrative and maintenance expenses at the head office and in the field incurred for both the MASICAP and SBAC assistance components.

Program Outputs

Direct outputs would be the new, expanded or improved business enterprises, as well as the training or entrepreneurial development of clients in preparing project feasibility studies and managing their businesses. In addition to the direct outputs, the training on-the-job of MASICAP and SBAC personnel themselves may be considered an indirect output.

III. THEORETICAL CONSIDERATIONS AND FRAMEWORK

The failure of large-scale manufacturing in generating the expected employment is quite widespread. For instance, in a number of countries in Latin America and Africa where there were substantial investments in manufacturing, employment in the sector grew less rapidly than the labor force and in some instances even declined in absolute terms (Morawetz 1974). SI is generally believed to have a greater capacity to absorb labor than does large-scale industry (LI) (e.g., Rao 1965, Paine 1971, IBRD 1978a).[4] Theoretically, LI would seem to have a better potential for promoting both direct and indirect employment through linkage effects, but it has a high propensity to import its inputs, resulting in a moderate increase in domestic production, not to mention the strain on foreign exchange (IBRD 1978a). In cases where the direct employment effects of SI are relatively small, indirect employment can be significant as discussed theoretically by Krishnamurty (1975) and empirically by Stewart (1975) with regard to the manufacture of cement blocks in Kenya.

SI is deemed particularly suitable in LDCs on account of its ability to employ unskilled labor. Paine (1971) discovered that Japanese SI employed a considerable proportion of unskilled labor to

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[4] For a skeptical view on the ability of SI to generate a large number of jobs efficiently, see Ho (1980).

allow for greater flexibility in production. Japanese producers found it easier to adjust the amount of labor than that of capital in times of fluctuating demand. By contrast, LI tends to use skilled labor and has to offer higher wages and benefits than does SI. The use of unskilled labor, however, tends to contribute to the low productivity (output/labor ratio) of SI. This low productivity of SI has also been attributed to primitive tools, inefficient organization and supervision in India (Rao 1965), or simply to insufficient capital equipment as in the Philippines (Bautista 1974).

While SI tends to have a low output/labor ratio, its output/capital ratio is generally higher than that of medium- and large-scale industry (MI and LI), as reported, for example, by the Bolton Committee of Britain (Boswell 1973). Shinohara (1968) found that in Japan small-scale enterprises (SEs) had generally low capital valuation inasmuch as they used mostly second-hand machinery. Scattered data worldwide, though incomplete and not strictly comparable, strongly suggest that investment per worker in SI is considerably lower than in MI and LI (de Vries 1979, Marsden 1981).

Apart from employment generation, SEs are also expected to increase domestic production or value-added that redounds as higher household incomes for the owners/entrepreneurs themselves as well as the employees (IBRD 1978b). This is supposed to lead to an improvement in income distribution to the extent that the benefited households belong to the low-income segment of society. Studies on India

(Fisher 1965) and Latin America (Nielson 1969) suggest such an income-distribution effect. The nature of the effect, however, may vary depending on the context being considered. Among areas (regions, provinces, or municipalities) the distribution may well improve, while within an area among households, it may worsen if the owners/entrepreneurs of SEs are the already better-off ("small-time capitalists") in the community. There is reason to believe that this type of distribution effect is taking place.[5] Hence, it is important to specify the context or the unit of analysis in examining the impact of SEs on income distribution.

Still another role that SI is expected to play is the promotion of rural and regional development, i.e., lessening rural-urban and interregional disparities. Inasmuch as SEs by their nature can dispense with agglomeration and urbanization economies, they may readily locate anywhere in the periphery (if they are of the "footloose" type) or near the source of materials (if they are of the "resource-oriented" type). It is also increasingly recognized that SEs can become an important source of non-farm activities in rural areas (Sander 1983). Banerji (1976) points out that SEs can prosper in the regions where resources are available and that the multiplier effect can be enhanced to the degree that local raw

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[5] This conjecture was supported by G. Piron, consultant to the Ministry of Industry, in a personal communication.

materials are utilized. Further, Morawetz (1974) observes that SEs can thrive in far-flung places that entail high transportation costs to the urban center.

The location of SEs has an implication on population movement to the extent that migration occurs on account of interregional differentials in employment opportunities and incomes. Thus, it may be argued that it makes sense to promote SEs in areas with surplus labor and low incomes so that out-migration may be moderated. There is some indication that out-migration can become excessive, leading to the stagnation of certain rural areas (Pernia 1977).

An impact of SI that seems not yet widely appreciated is that on female labor force participation. Certain types of SEs employ mostly female workers, such as garment making, food processing, and the majority of traditional handicrafts (Dhamiya 1975).

A less perceptible effect is that on human fertility. The fertility effect can be conceived as an indirect one passing via female labor force participation and income. Concerning the former route, some authors find it useful to distinguish between factory and non-factory types of SEs. For instance, Staley and Morse (1965) report that in Japan non-factory types (industrial homeworks) tend to encourage larger families, but factory-type employment dampens the fertility rate. As regards the income route, fertility may rise or fall depending on whether household income is below or above some

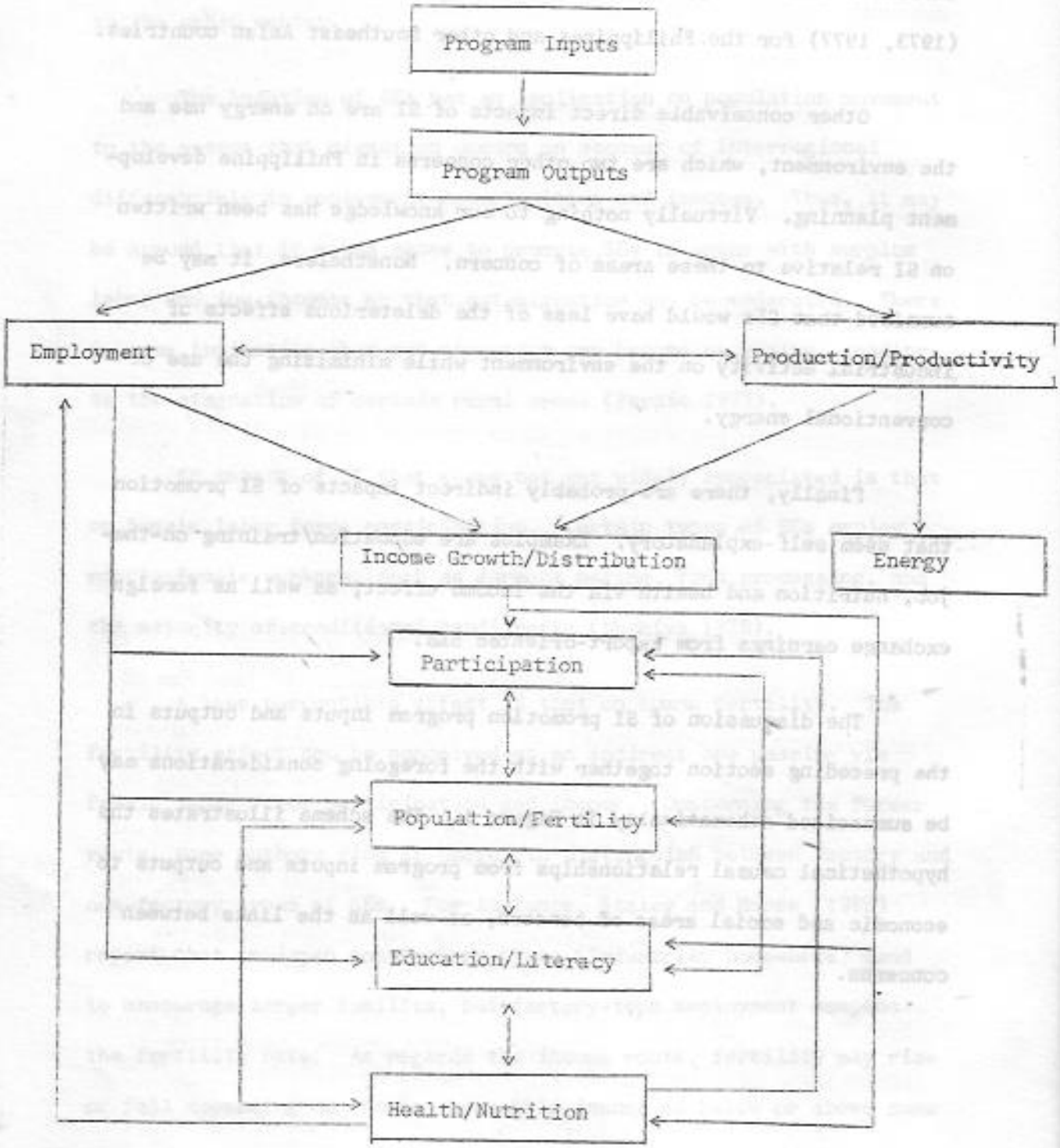
threshold value as hypothesized and empirically tested by Encarnación (1973, 1977) for the Philippines and other Southeast Asian countries.

Other conceivable direct impacts of SI are on energy use and the environment, which are two other concerns in Philippine development planning. Virtually nothing to our knowledge has been written on SI relative to these areas of concern. Nonetheless, it may be surmised that SEs would have less of the deleterious effects of industrial activity on the environment while minimizing the use of conventional energy.

Finally, there are probably indirect impacts of SI promotion that seem self-explanatory. Examples are education/training on-the-job, nutrition and health via the income effect, as well as foreign exchange earnings from export-oriented SEs.

The discussion of SI promotion program inputs and outputs in the preceding section together with the foregoing considerations may be summarized schematically in Figure 1. The schema illustrates the hypothetical causal relationships from program inputs and outputs to economic and social areas of concern, as well as the links between concerns.

Figure 1. A Simple Schema of the Links of the SI Promotion Program to Areas of Concern



IV. METHOD OF ANALYSIS

The Survey

The focus of the survey was Tagbilaran, the capital city of Bohol province which is one of the Visayas islands. The context of small enterprises in Bohol can be seen in Table 3. Distribution of the number of enterprises in Bohol is similar to the national (Table 1) except for the visible absence of a large industry. As regards employment and production, SEs clearly predominate the manufacturing scene in the province, with only 3.5 percent employment and just over a quarter output share contributed by one ME. In terms of female participation, female workers constitute about 32 and 25 percent of "cottage" and "small" industry workers, respectively, but virtually nil of medium industry employees.

Table 3. Number of Establishments, Employment and Value-Added in Small, Medium and Large Industries, Bohol 1975

Employment Size	Enterprises	%	Employment	%	Value-Added (₱000)	%
Cottage	689	(72.8)	1,614	(44.1)	2,938	(23.1)
Small	256	(27.1)	1,920	(52.4)	6,296	(49.5)
Medium	1	(0.1)	129	(3.5)	3,493	(27.4)
Large	0	(0.0)	0	(0.0)	0	(0.0)
TOTAL	946	(100.0)	3,663	(100.0)	12,727	(100.0)

Note: More recent data were still being revised at the time of writing this paper.

Source: NCSO, Census of Establishments.

Tagbilaran is a typical small provincial city (42,683 population in 1980) where there has been some palpable government intervention for small enterprises to speak of, i.e., where there is a sufficient number of SEs that have received the types of MASICAP and SBAC inputs described in section II. The site may be considered one of the pioneer areas of the Ministry of Industry's SI program with MASICAP intervention starting there in late 1974.

The survey for this research project had enterprise and household components. The enterprise component was undertaken during the period May-July 1980 while the household portion was carried out during July-September 1980.

The enterprise survey tried to cover 60 out of 100 MASICAP- and SBAC-assisted firms, and about 120 partially assisted or completely unassisted enterprises drawn from a population of 180. As mentioned earlier, under the MASICAP and SBAC programs of the Ministry of Industry there had been three types of inputs, viz. pre-loan consultancy service, below-market-interest loans, and post-loan technical assistance. In practice, however, it is difficult to untangle one type of input from the other because MASICAP and SBAC services often complemented each other. Apart from MASICAP/SBAC assistance, there have been other (partial) types of services provided by the National Cottage Industry Authority (NACIDA) and the Development Bank of the Philippines (DBP). Accordingly, the survey collected

pertinent data from three SE categories: MASICAP/SBAC-assisted, other-assisted, and unassisted.

The household survey was linked to the enterprise survey according to the following scheme:

Type of Household (HH)	Original Numbers in Sample	Actual Numbers Used in Analysis
a) Owner HHs of MASICAP/SBAC (M/S)-assisted enterprises	60	29
b) Owner HHs of M/S-unassisted enterprises	120	91
c) Unrelated worker HHs in M/S-assisted enterprises	100	89
d) Unrelated-worker HHs in M/S-unassisted enterprises	100	90
e) HHs engaged in other livelihood (retail trade, government service, landlords, etc.)	150	129
Total	530	428

The scheme was designed to allow a tracing of the hypothesized impacts of SE development on the households of owners/entrepreneurs and of workers. Group (e) households were included as a reference group. The HH survey contained a total of 17 blocks of questions on various economic, social and demographic matters of interest.

To supplement the enterprise and household data, a survey of key informants was conducted during the summer of 1981. Key informants interviewed included the mayor, vice-mayor, parish priest, school heads,

barangay leaders, bank managers, civic association presidents, etc. -- numbering 34 in all. The survey was designed to get a sense of the perceptions of "inside authoritative observers" about the role of small enterprises in socioeconomic development at the firm, household and community levels.

The Data

Of the 180 enterprises targetted for the survey only about 156 could be reached by the interviewers. Due to the vicissitudes of field work and data processing, however, only 85 units of observation turned out with the requisite information. Of the 85, 34 were unassisted, 31 MASICAP/SBAC-assisted and 20 assisted by other programs. Before-assistance data could not be gathered for most establishments and the little information that was collected was not useful.

A technical problem that was raised time and again in the past had to do with probable non-randomness of government intervention which would then render any impact assessment invalid. That is to say, there seemed a possibility that MASICAP/SBAC (M/S) assistance was systematically extended to firms on the basis of certain characteristics. To test for non-randomness the following regression equation reflecting the assistance decision was run:

$$G_g = f(L_i, K_i, V_i, W_i, I_k)$$

where G_g = 1 if enterprise received assistance type g, 0 otherwise;

g = 1 if M/S assistance,

g = 2 if other type of government assistance,

g = 3 if no assistance received;

L_i = monthly man-hours of employment in enterprise i;

K_i = capital stock (fixed assets in pesos) in enterprise i;

V_i = monthly value-added (in pesos) in enterprise i;

W_i = hourly wage rate (in pesos) in enterprise i;

I_k = 1 if enterprise i belongs to industry class k,

0 otherwise;

k = 1 food manufacturing

k = 2 wearing apparel

k = 3 wood products

k = 4 furniture and fixtures

k = 5 printing, publishing and allied

k = 6 fabricated metal products

k = 7 electrical machinery, apparatus and supplies

k = 8 other non-metallic mineral products

k = 9 other manufacturing

k = 10 hotel and restaurant.

The equation was applied to data for two periods: November 1977 and February 1980. In both cases the results were statistically insignificant, i.e., none of the t-values (except possibly for V_i and I_9) was statistically different from zero and the R^2s were all low (Annex Table 1).[6] Hence, the test results do not substantiate the problem of non-randomness of government intervention through either MASICAP/SBAC (G_1) or other assistance programs (G_2).

Estimating Equations

In order to evaluate the economic and social impacts at the enterprise and household levels of small industry promotion, estimating equations are specified below (following standard assumptions about firm and household behavior). The enterprise equations include a labor demand function, a production function, labor-, capital- and energy-productivity functions:

$$L_i = f_1 (K_i, W_i, I_k, G_g, T) \qquad (1)$$

$$\log V_i = f_2 (\log K_i, \log L_i, \log E_i, I_k, G_g, T) \qquad (2)$$

$$\log \frac{V_i}{L_i} = f_3 (\log \frac{K_i}{L_i}, \log E_i, I_k, G_g, T) \qquad (3)$$

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[6] Since the dependent variable is dichotomous, these statistical tests are technically not valid. However, it has been shown that the results of OLS are oftentimes similar to those of the more appropriate techniques like logit analysis (see Pernia 1979).

$$\log \frac{V_i}{K_i} = f_4 \left(\log \frac{L_i}{K_i}, \log E_i, I_k, G_g, T\right) \quad (4)$$

$$\log \frac{V_i}{E_i} = f_5 \left(\log K_i, \log L_i, I_k, G_g, T\right) \quad (5)$$

where L_i, V_i, K_i, W_i, I_k, and G_g are as defined above; E_i = energy use (in pesos) in enterprise i; and T = timing of M/S assistance assuming the values 5, 4, 3, 2, 1, and 0 for 1974-75, 1976, 1977, 1978, 1979-80, and no assistance, respectively. Since the question of interest is whether or not government assistance makes a difference, the focal explanatory variables are G_g as well as T; I_k serves as a control variable for type of product.

For the household-level analysis, the equations for income, nutrition, health, fertility and participation are as follows:

$$Y_{hh} = f_6 \left(L_{hh}, E_h, A_h, G_{hha}\right) \quad (6)$$

$$N_{hh} = f_7 \left(\hat{Y}_{hh}, E_h\right) \quad (7)$$

$$H_{hh} = f_8 \left(\hat{Y}_{hh}, \hat{N}_{hh}, E_h\right) \quad (8)$$

$$F_w = f_9 \left(YN, YX, E_w, A_{wp}, AM\right) \quad (9)$$

$$P_w = f_{10} \left(\hat{Y}_{hh}, E_w, A_{wp}\right) \quad (10)$$

The endogenous variables are

Y_{hh} = annual income of household (in pesos);

N_{hh} = nutritional level -- average weekly expenditure (in pesos) on food per person;

H_{hh} = health -- 1 if any household member got sick during past 30 days, 0 otherwise;

F_w = fertility of housewife -- number of children born alive;

P_w = participation of housewife in community affairs -- 1 if member of any organization, 0 otherwise.

The exogenous variables are

L_{hh} = total annual number of hours worked by working household members;

E_h = education of household head in years;

A_h = age of household head in years;

G_{hha} = 1 if household belongs to category a, 0 otherwise --
a = 1 if owner HH of M/S-assisted enterprise, 2 if owner HH of M/S-unassisted enterprise, 3 if unrelated worker HH in M/S-assisted enterprise, 4 if unrelated worker HH in M/S-unassisted enterprise, 5 if HH engaged in other livelihood;

$YN = \min(0, Y_{hh} - 4000)$

$YX = \max(0, Y_{hh} - 4000)$ -- ₱4000 represents roughly the annual minimum wage for 1980 in the project site

(national was ₱2,500 in 1973 adjusted for annual inflation rate of 13.1 percent and further adjusted downward by about one-third to reflect income level in Central Visayas relative to the national average);

E_w = education of wife in years;

A_{wp} = 1 if wife is in age group p, 0 otherwise -- p = 1 if 15-19, 2 if 20-24, 3 if 25-29, 4 if 30-34, 5 if 35-39, 6 if 40 +;

AM = age at marriage of wife in years.

The equations were estimated by OLS; the household equations were estimated recursively -- a ^ sign on an endogenous variable denotes that such variable was estimated from a previous equation. Equation (9) follows Encarnacion's specification of the threshold model of fertility. The focal explanatory variable is G_{hha} which was designed to link the enterprise to the household. G_{hha} would show if owning, or working in, an M/S-assisted enterprise makes a difference.

V. EMPIRICAL RESULTS AND DISCUSSION

The regression results are given in Tables 4 and 5 for estimated impacts at the enterprise level, and in Tables 6 and 7 for impacts at the household level. A discussion of findings with respect to the areas of concern follows.

Employment

In general, government assistance to small enterprises (SEs) seems to have a favorable effect on employment in these enterprises. Especially noteworthy is the impact of the MASICAP/SBAC (M/S) program which is more significant than the ordinary type of assistance (e.g., through the usual channels of the NACIDA or the DBP). M/S assistance (G_1) significantly results in additional employment of approximately three full-time equivalent workers per enterprise, compared to just over two full-time equivalent workers generated by the ordinary type of assistance (G_2) which is not statistically significant as shown in Table 4.

As expected, an increase in capital stock (K_i) has a strong positive effect on employment in SEs while wage rate (W_i) has the usual negative sign. To the extent that SE assistance normally includes capital augmentation, the impacts of G_1 or G_2 may also be partially embodied in the K effect. Among the various industry classes ($I_{k's}$), the hotel and restaurant (I_{10}) industry seems to

stand out in employment generation. The overall employment impact of SEs, particularly the M/S-assisted ones, at the community level was also strongly affirmed by the key informants survey.

Production and Productivity

MASICAP/SBAC assistance also appears to make a difference insofar as production in SEs is concerned. As in the case of employment, M/S intervention has a more appreciable impact relative to the ordinary type of assistance (Table 4). As expected, labor and capital figure prominently in the production function of SEs. Establishments engaged in wood products and those in the hotel and restaurant business contribute relatively much value-added to the SI sector.

As regards labor productivity (V_{i/L_i}), M/S assistance shows the positive sign and is also significant. Likewise, an increase in capital per worker (K_{i/L_i}) which may result from assistance, as already noted, seems to have a strong impact on labor productivity -- supporting the common observation of capital scarcity in SEs. For instance, raising capital-labor ratio by 10 percent results in a 3.0 percent rise in productivity per man-hour (Table 4). Among the various SE types, those manufacturing wood products exhibit the highest labor productivity.

Concerning capital productivity ($^{V}i/K_i$), M/S assistance exerts a positive impact while other assistance, as in the case of labor productivity, is insignificant. At the same time, increasing capital utilization ($^{L}i/K_i$) (through, e.g., overtime work) following technical assistance appears to markedly improve capital productivity. In quantitative terms, doubling capital utilization raises capital productivity by about 70 percent -- lending further support to earlier studies.

Energy

Firms benefiting from government aid also tend to be more energy-efficient, and this is especially true of M/S-supported establishments. Of the various SE categories, the wood products type again appears to be particularly energy-efficient (Table 4).

Timing of M/S Assistance

The hypothesis regarding timing of assistance was that the earlier an enterprise received M/S assistance, the better off it would be in terms of the employment and production/productivity measures. This hypothesis, however, is not borne out in a linear sense as Table 5 shows. Rather, the pattern seems to be that the earliest (T_{74-75}) assisted SEs have more or less an overall edge while those at mid-period (T_{77}) show a low performance and

the latest ones (T_{79-80}) are the poorest performers. While the pattern is understandable for the earliest and the latest SEs, the behavior of those in-between is not readily explanable. One likely cause may have to do with staff turnover in the field.

Income

As may be expected, it appears that M/S-assisted enterprises tend to benefit primarily the owners. For instance, an M/S-assisted firm results in about ₱10,991 average additional income during the year for the owner household, ceteris paribus, relative to households engaged in other livelihood (retail trade, government service, etc.) (Table 6). The effect on household incomes of workers in assisted SEs does not seem to be as favorable. However, it may be argued that if these workers were previously unemployed or were earning lower wages, then by definition they are relatively better off being employed in assisted SEs. As expected, number of working family members, education and age of household head are all positive determinants of household income.

Income Distribution

From the preceding discussion on income it may be inferred that government assistance to SEs tends to worsen income distribution across households in the community. To begin with, SE owners in general whether assisted or unassisted have the highest average income

relative to worker households and households engaged in other types of livelihood -- the respective mean annual incomes are ₱14,303; ₱5,844; and ₱10,511. This is actually not surprising since one has to be relatively affluent to start and own a business.

While promotion of SEs may lead to some deterioration of intra-community (or inter-household) income distribution (at least in the short run), as conjectured earlier, the result may of course be different for income distribution across larger areal aggregates (e.g., municipalities, provinces, or regions). That is to say, the community in question may be better off in an aggregate distribution context due to SI promotion. Moreover, it may be argued that some worsening of intra-community income distribution is not all that bad if SI promotion results in incremental employment which then raises in absolute terms the incomes of poor households. The local experts also feel that SEs have such a favorable effect on the poor; hence, they favor SI promotion in the community.

Nutrition and Health

As would be expected, higher incomes allow households to attain higher nutrition levels. For instance, a ₱1000 rise in annual family income results in about a ₱1.20 increase in weekly expenditure on food per household member (Table 6). Education of household head has a non-linear effect on nutrition -- negative at low levels and positive at higher levels.

The income effect on health has the wrong sign and is not significant, while the effect of nutrition has the correct sign but is not significant either. This may be due to the underreporting of illness incidence -- common especially among low-income households -- partly because of differences in illness perception among different income groups.

Fertility and Migration

The regression results for fertility are in accord with the threshold model -- below threshold income the coefficient is positive though not significant; above the threshold it is negative and significant (Table 7). Education of the wife also has the expected non-linear effect on fertility. The coefficients of the control variables are in accord with expectation.

As regards migration, the local experts suggest that SE development in the area has attracted in-migrants from other towns in the province and even from other provinces. However, they also believe that SEs have not stemmed the out-migration tradition of the place.

Participation

Women's participation in community affairs tends to appreciably rise with household income, and also with age (Table 7). The effect of education on participation is vague, however. Regarding women's participation in the labor force, since from one-fourth to one-third of employment in SEs are accounted for by female workers, it is safe to assume that SI promotion would tend to mop up the unemployed female labor force. This supposition is also supported by the oral testimony of the key informants.

Environment

Statistical data for the environment concern are not available, but the local experts favor SE development in the area because, in their view, SEs are comparatively non-pollutants. Also, they see SEs as occupying less space and as relatively less energy intensive. Although one might surmise that SI development would tend to deplete local raw materials, the key informants are as yet not sensitive to this possibility.

A Note on Project Cost

It would be misleading to talk only about the benefits of SI promotion. A brief note on project cost is, therefore, in order at this juncture.

From the start of MASICAP/SBAC operation in 1974 up to 1980, program expenditures on 100 SEs in the project site totaled some ₱668,302 in current prices (Annex Table 2). In real (1972 prices) terms, though, the amount is only about ₱297,493 -- implying that the real cost per assisted SE is around ₱2,975. Adding to this figure the real interest subsidy enjoyed by an SE, on the average, of about ₱3,198, the "full cost" per SE comes out to roughly ₱6,173.[7] The total "full cost" on the project site during the period 1974-80 is thus approximately ₱482,976.

VI. CONCLUDING REMARKS

Small-scale industry (SI) promotion became a major policy instrument in developing countries during the 70s and will probably continue to be popular in the 80s. As in many developing countries, small enterprises (SEs) in the Philippines are predominant in terms of number of establishments and employment share but are depressed as regards value-added contribution. In light of this reality and the assumed potential of SI in helping pursue the goals of employment, income distribution, and regional/rural development, the government through the Ministry of Industry launched in 1974 an SI promotion program -- the MASICAP which was later complemented by the SBAC.

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[7] Interest subsidy arises from the fact that most assisted SEs pay only 14 percent annual interest on their loans instead of the market rate of 20 percent or so.

A review of the literature indicates that the promotion of SEs can have impacts on the usual economic and social concerns of development policy as well as on others. In other words, SI promotion policy seems to have sufficient theoretical basis. In the present study, the hypothesized economic and social impacts of SI promotion are evaluated using survey data and simple econometric techniques.

The findings of the study lend some credence to small-scale industry promotion as an instrument of development policy. Although some of the popular claims about the contribution of small-scale enterprises to development goals may be overstated, the study provides some indication that public policy support for small industry development in the provinces is worthwhile because it apparently makes a difference with respect to socioeconomic concerns. Intuitively, the project cost does not seem excessive although, as with project benefits, it has to be compared with the costs of other development projects.

On the whole, the small industry promotion program (MASICAP/SBAC) seems to have favorable impacts on employment, production/productivity, energy efficiency, and income. For instance, an assisted SE generates direct incremental employment equivalent to three full-time workers at the same time that production and productivity are significantly enhanced at a total promotion cost of just over ₱6,000. To better appreciate this result, one can think in terms of 100 assisted SEs spawning 300 additional workers in a town, not to mention the indirect employment that would be

generated as well, and the incremental output resulting from such direct and indirect employment. Newly established SEs are likely to generate even more employment.

The effect on income distribution among households appears to be unfavorable at least in the short run on account of benefits primarily going to SE owners. Nevertheless, employment generation may be expected to raise in absolute terms the incomes of poor households. Higher incomes apparently enable households to attain better nutrition and housewives to participate in community affairs, as well as reduce the fertility of households above the income threshold.

Other impacts at the household level are either more difficult to discern or are more hypothetical, partly because they tend to operate via income and other intervening variables and partly because the period of gestation allowed for in this study is too short. Accordingly, nothing clear can be said about health and migration, and nothing at all about an education and literacy impact because it is even more remote, being largely an intergenerational effect. There are no data on an environmental impact except some qualitative information from local experts.

The survey of key informants seems to have served reasonably well its ancillary role in the analysis. In general, the authoritative views of community leaders are consistent with the analytical results. They also tend to affirm the likely positive externalities on the less discernible areas of concern.

On the whole, the approach that combines quantitative and qualitative surveys for the purpose of economic and social impact analysis has something to recommend itself. Needless to say, the ways in which the surveys were designed and conducted for this study leave some room for improvement. For instance, it should be possible to capture indirect employment and production effects through a more carefully designed survey; also, a before-after survey would probably result in firmer conclusions. It should be possible to gain these improvements in a next attempt at this type of an analysis, given the lessons of experience.

Table 4. Impact of Government Assistance on SEs: Type of Assistance

Explanatory Variables	Dependent Variables				
	L_i	log V_i	log V_i/L_i	log V_i/K_i	log V_i/E_i
Constant	2853.758	1.553	-0.651	-0.651	4.886
Labor (log L_i)		0.394			-0.139
		(3.743)			(-0.773)
Capital (K_i;log K_i)[a/]	0.001	0.176			-0.409
	(4.897)	(2.463)			(-3.969)
Energy (log E_i)		0.104	-0.060	-0.060	
		(1.536)	(-1.146)	(-1.146)	
Wage (W_i)	-67.130				
	(-2.064)				
Capital/Labor (log K_i/L_i)			0.304		
			(4.644)		
Labor/Capital (log L_i/K_i)				0.696	
				(10.609)	
M/S Assistance (G_1)	485.610	0.587	0.323	0.323	1.271
	(1.767)	(2.906)	(1.601)	(1.601)	(3.503)
Other Assistance (G_2)	389.036	0.216	-0.001	-0.001	0.697
	(1.373)	(1.113)	(-0.007)	(-0.007)	(1.975)
Food (I_1)	-1803.880	-0.034	0.103	0.103	-0.396
	(-2.408)	(-0.081)	(0.225)	(0.225)	(-0.503)
Apparel (I_2)	-2230.700	-0.331	-0.302	-0.302	0.422
	(-2.960)	(-0.753)	(-0.639)	(-0.639)	(0.523)
Wood (I_3)	-1577.235	1.154	1.083	1.083	1.717
	(-1.600)	(1.929)	(1.682)	(1.682)	(1.549)
Furniture (I_4)	-1215.734	-0.398	-0.689	-0.689	1.021
	(-1.368)	(-0.732)	(-1.193)	(-1.193)	(1.033)
Printing (I_5)	-2166.534	-0.181	-0.305	-0.305	1.039
	(-2.878)	(-0.410)	(-0.644)	(-0.644)	(1.297)
Metal (I_6)	-1540.074	-0.424	-0.329	-0.329	-0.790
	(-1.819)	(-0.851)	(-0.614)	(-0.614)	(-0.856)
Electrical (I_7)	-2214.497	-0.320	-0.212	-0.212	-0.185
	(-3.019)	(-0.755)	(-0.465)	(-0.465)	(-0.235)
Mineral (I_8)	-2090.510	-1.300	-1.590	-1.590	0.367
	(-1.682)	(-1.710)	(-1.955)	(-1.955)	(0.264)
Other (I_9)	-2225.644	-0.509	-0.348	-0.348	0.105
	(-2.752)	(-1.002)	(-0.638)	(-0.638)	(0.112)
$\bar{R}^2$	0.337	0.691	0.397	0.710	0.336
F-Value	4.281	14.410	5.250	16.852	4.273
N	85	85	85	85	85

[a/] K_i is used for the regression with L_i as the dependent variable while log K_i is used for all others.

Note: t-values underneath regression coefficients.

Table 5. Impact of Government Assistance on SEs: Timing of M/S Assistance

Explanatory Variables	Dependent Variables				
	L_i	$\log V_i$	$\log V_i/L_i$	$\log V_i/K_i$	$\log V_i/E_i$
Constant	3415.990	1.556	-0.274	-0.274	4.514
Labor ($\log L_i$)		0.411 (4.081)			-0.085 (-0.446)
Capital (K_i;$\log K_i$)[a/]	0.001 (5.497)	0.231 (3.341)			-0.392 (-3.634)
Energy ($\log E_i$)		0.040 (0.601)	-0.103 (-1.981)	-0.103 (-1.981)	
Wage (W_i)	-81.776 (-2.534)				
Capital/Labor ($\log K_i/L_i$)			0.336 (5.230)		
Labor/Capital ($\log L_i/K_i$)				0.664 (10.335)	
Year (T_{74-75})	1085.558 (2.262)	0.620 (1.941)	0.379 (1.151)	0.379 (1.151)	1.337 (2.113)
Year (T_{76})	788.632 (1.431)	0.669 (1.889)	0.494 (1.329)	0.494 (1.329)	0.833 (1.173)
Year (T_{77})	120.799 (0.312)	0.205 (0.819)	0.135 (0.509)	0.135 (0.509)	0.659 (1.320)
Year (T_{78})	465.678 (0.909)	1.217 (3.632)	1.178 (3.309)	1.178 (3.309)	0.885 (1.260)
Year (T_{79-80})	-476.227 (-1.068)	0.103 (0.368)	-0.115 (-0.397)	-0.115 (-0.397)	1.222 (2.253)
Food (I_1)	-2294.503 (-2.972)	-0.262 (-0.619)	-0.157 (-0.350)	-0.157 (-0.350)	-0.349 (-0.411)
Apparel (I_2)	-2580.952 (-3.417)	-0.492 (-1.154)	-0.529 (-1.169)	-0.529 (-1.169)	0.634 (0.754)
Wood (I_3)	-1443.840 (-1.473)	1.189 (2.061)	1.077 (1.760)	1.077 (1.760)	1.883 (1.633)

Table 5. Impact of Government Assistance on SEs: Timing of M/S Assistance (Continuation)

Explanatory Variables	Dependent Variables				
	L_i	log V_i	log V_i/L_i	log V_i/K_i	log V_i/E_i
Furniture (I_4)	-1934.266	-0.744	-1.020	-1.020	1.147
	(-2.059)	(-1.337)	(-1.745)	(-1.745)	(1.057)
Printing (I_5)	-2511.114	-0.376	-0.508	-0.508	1.122
	(-3.308)	(-0.872)	(-1.111)	(-1.111)	(1.334)
Metal (I_6)	-1765.401	-0.611	-0.570	-0.570	-0.718
	(-2.082)	(-1.259)	(-1.106)	(-1.105)	(-0.737)
Electrical (I_7)	-2668.493	-0.496	-0.441	-0.441	-0.077
	(-3.584)	(-1.195)	(-1.000)	(-1.000)	(-0.092)
Mineral (I_8)	-2644.828	-1.654	-1.866	-1.866	0.199
	(-2.150)	(-2.249)	(-2.397)	(-2.397)	(0.137)
Other (I_9)	-2462.242	-0.928	-0.878	-0.878	0.315
	(-2.934)	(-1.802)	(-1.605)	(-1.605)	(0.309)
$\bar{R}^2$	0.359	0.714	0.456	0.739	0.282
F-Value	3.938	13.324	5.395	15.842	3.066
N	85	85	85	85	85

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[a] K_i is used for the regression with L_i as the dependent variable while log K_i is used for all others.

Note: t-values underneath regression coefficients.

Table 6. Household Regression Results for Income, Nutrition and Health

Explanatory Variables	Dependent Variables		
	Y_{hh}	N_{hh}	H_{hh}
Constant	-5170.8594	13.2927	0.0527
HH Labor (L_{hh})	1.8140		
	(6.7809)		
Education (E_h)	688.7581	-1.1586	0.0210
	(5.2680)	(-1.0512)	(0.0964)
Education (E_h^2)		0.0716	-0.0011
		(1.2205)	(-0.0803)
Age (A_h)	53.6320		
	(1.2965)		
HH Income ($\hat{Y}_{hh}$)		0.0012	0.0000
		(6.2382)	(0.0110)
HH Nutrition ($\hat{N}_{hh}$)			-0.0031
			(-0.0164)
Owner with M/S (G_{hh1})	10991.3047		
	(5.2138)		
Owner without M/S (G_{hh2})	-1851.9314		
	(-1.3201)		
Worker with M/S (G_{hh3})	-2132.9067		
	(-1.4836)		
Worker without M/S (G_{hh4})	-2014.6531		
	(-1.4013)		
$\bar{R}^2$	0.2895	0.1504	-0.0032
F-value	25.8601	26.1992	0.6579
N	428	428	428

Note: t-values underneath regression coefficients.

Table 7. Household Regression Results for Fertility and Participation

Explanatory Variables	Dependent F_w	Explanatory Variables	Dependent P_w
Constant	4.4489		-0.1710
Below threshold (YN_{hh})	0.00005	$\hat{Y}_{hh}$	0.00002
	(0.4673)		(5.3012)
Above threshold (YX_{hh})	-0.00001	E_w	0.0041
	(-1.6069)		(0.1083)
Education (E_w)	0.2466	E_w^2	-0.0003
	(1.5786)		(-0.1495)
Education (E_w^2)	-0.0114	A_w	0.0095
	(-1.4377)		(3.3184)
Age 20-24 (A_{w2})	2.1333		
	(2.2595)		
Age 25-29 (A_{w3})	3.1270		
	(3.5265)		
Age 30-34 (A_{w4})	4.4133		
	(5.0394)		
Age 35-39 (A_{w5})	5.6249		
	(6.4388)		
Age 40+ (A_{w6})	7.2411		
	(8.4103)		
Marital age (ΔM)	-0.2950		
	(-13.1952)		
$\bar{R}^2$	0.5293		0.1488
F-Value	38.7884		15.6861
N	337		337

Note: t-values underneath regression coefficients.

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ANNEX

Table 1. Government Assistance Decision as Influenced by Enterprise Characteristics: Test for Randomness

Explanatory Variables	1977		1980	
	MASICAP/ SBAC (G_1)	Other Assistance (G_2)	MASICAP/ SBAC (G_1)	Other Assistance (G_2)
Constant	0.0487	0.2918	0.1721	0.1466
Labor (L_i)	0.00002	0.00004	0.00001	0.00006
	(.3948)	(0.6094)	(0.2080)	(0.8461)
Capital (K_i)	0.0000	-0.0000	-0.0000	-0.0000
	(0.7366)	(-0.2275)	(-0.7307)	(-0.1726)
Value- added (V_i)	0.00005	-0.00002	0.0001	-0.00003
	(1.5785)	(-0.5241)	(1.6764)	(-0.4747)
Wage (W_i)	-0.0007	-0.0008	-0.0073	-0.0011
	(-0.9974)	(-0.9163)	(-0.4811)	(-0.0729)
Apparel (I_2)	0.0272	-0.0126	-0.0879	0.1875
	(0.2217)	(-0.0895)	(-0.5196)	(1.0987)
Wood (I_3)	-0.7656	0.9082	-0.2532	0.4310
	(-1.6153)	(1.6705)	(-0.8147)	(1.0373)
Furniture (I_4)	0.2625	-0.1009	0.3321	0.1248
	(1.1030)	(-0.3697)	(1.1211)	(0.4175)
Printing (I_5)	0.1415	-0.1377	0.1292	0.0602
	(0.9671)	(-0.8204)	(0.7045)	(0.3252)
Metal (I_6)	0.4100	-0.2166	0.3822	-0.1785
	(1.7500)	(-0.8062)	(1.4678)	(-0.6797)
Electrical (I_7)	0.0593	-0.0828	0.0110	0.0953
	(0.4564)	(-0.5550)	(0.0649)	(0.5580)
Mineral (I_8)	0.3938	0.1996	-0.1965	-0.1839
	(1.3447)	(0.5941)	(-0.4156)	(-0.3858)
Other (I_9)	0.4022	-0.0590	0.3602	0.0318
	(1.8352)	(-0.2347)	(1.4916)	(0.1306)
Hotel (I_{10})			0.1037	-0.1289
			(0.2880)	(-0.3545)
$\bar{R}^2$	0.1748	-0.0535	0.1146	-0.0888
F-Value	2.6236	0.6110	1.8359	0.4730
N	93	93	85	85

Note: t-values underneath regression coefficients.

ANNEX

Table 2. MASICAP/SBAC Program Expenditures and Interest Subsidy to SEs in Tagbilaran, 1974-1980
(in pesos)

A. Program Expenditures

Year	Expenditures: Current MASICAP	Expenditures: Current SBAC	Expenditures: Constant 1972 Prices[a] MASICAP	Expenditures: Constant 1972 Prices[a] SBAC	Number of Projects[b] MASICAP	Number of Projects[b] SBAC	Real Cost/Project MASICAP	Real Cost/Project SBAC	Real Cost/Project MASICAP-SBAC
1974-75	₱ 38,205	-	₱ 23,561	-	4	-	₱ 5,890	-	₱5,890
1976	79,475	₱ 11,734	43,311	₱ 6,394	13	6	3,332	₱ 1,066	2,616
1977	97,721	9,808	48,281	4,846	23	2	2,099	2,423	2,125
1978	81,477	56,205	37,547	25,901	19	4	1,976	6,475	2,759
1979	92,830	40,845	36,823	16,202	18	1	2,045	16,202	2,791
1980	118,971	41,031	40,618	14,009	6	4	6,770	3,502	5,463
	₱508,679	₱159,623	₱230,141	₱67,352	83	17	₱ 2,773	₱ 3,962	₱2,975

B. Interest Subsidy to MASICAP Projects[c]

	Current	Constant 1972 Prices[a]	Number of Projects	Real Cost/Project
1974-75	₱ 19,096	₱ 11,777	3	₱ 3,926
1976	62,042	33,810	9	3,757
1977	109,781	54,240	16	3,390
1978	90,686	41,791	13	3,215
1979	85,931	34,086	13	2,622
1980	28,644	9,779	4	2,445
	₱396,180	₱185,483	58	₱ 3,198

[a] CPI for areas outside Metro Manila.

[b] Refers to number of small enterprises assisted.

[c] Interest subsidy on 58 projects (information on which is given for the entire 1974-80 period) were allocated among the individual years using the percentage distribution of the 83 MASICAP projects over the period.

Source: Bureau of Small and Medium Industries, Ministry of Trade and Industry.