ABSTRACTS OF DISSERTATIONS AND THESES

Ph.D. Dissertations

Mohammad Mohsin Ali, *Production Decisions and Fertility Behavior of Agricultural Households: A Microeconomic Approach,* School of Economics, University of the Philippines, 1982.

This study sought to explain the different fertility levels of agricultural households by examining their production behavior. Child labour played the key role in the analysis. By estimating the child labour demand function, the direct contribution of children in production activities, i.e., the economic value of children to parents, was measured from the production segment. Differences in the value of children implied differences in demand for child labour in the production activities which were reflected in the pattern of family-limiting behavior of agricultural households.

To analyze production, the profit function approach was used to estimate factor demand and output supply functions. For the fertility segment, Coale-Trussell's model of marital fertility function was used to identify households either in the high fertility or in the low fertility group. The observed fertility differentials were then explained with the help of the production behaviour of the household.

A negative relationship between fertility control and farm size and ownership status was observed in this study. The results supported the prevalent *a priori* theorising and some of the empirical work on the issue. The 'endowment' hypothesis on fertility, where well endowed households show lower degree of family-limiting behavior than their less-privileged counterparts, was accepted. An alternative hypothesis, the so-called 'nutrition hypothesis,' was also put forward to explain the observed fertility differentials across socioeconomic and product-mix groups.

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Edna S. Angeles, *An Economic Analysis of Migration and Work Behavior of Married Women in the Philippines,* School of Economics, University of the Philippines, 1982.

This study attempted to analyze the determinants of married women's migration and labor supply decisions (i.e., labor force participation and hours of work), where one is considered affecting and being affected by the other. At the heart of the analysis was the idea that these two decisions form part of a larger household decision-making process and that the wife's decisions are made interdependently with those of the husband. Likewise, the problem was analyzed in relation to the idea that the wife's economic activities are governed primarily by the need to attain or maintain a subsistence standard of living for the family.

The migration model stresses the idea that the wife's employment and earnings affect a family's decision to move and the results suggest that they tend to deter migration. The implication is that a reduction in the incidence of married female tied movers is possible by increasing the wife's attachment to the labor market.

Although migration in general tends to depress labor force participation, the results of this study suggested that differential effects exist when one controls for timing of the move and areas of origin and destination. For example, recent and chronic migrants tended to work less than nonmigrants and early migrants; migrants from rural areas were less likely to be employed than rural nonmigrants and migrants from urban areas; and migrants to urban areas as well as urban nonmigrants were less likely to work than rural migrants and nonmigrants. Similar analysis was done to test the effect of migration on wife's earnings. The results showed that early migrants fared well compared with rural nonmigrants and other migrants and their earnings compared well with those of the urban nonmigrants. This lent support to the hypothesis that the decline in earnings as a result of migration may be temporary and may increase given enough time to establish the household and search the labor market extensively.

The effects of income and education on wife's labor force participation conformed with earlier findings by Encarnación. For example, the marginal effect of education was negative when it was below the threshold. The explanation for this behavior is based on the assumption that wife's earnings potential increases as her education increases even for low levels (i.e., below the threshold) such that she can work less to attain subsistence income for the family. However, such was not the case when hours of work was used instead. The effect of education on hours of work was positive when it was below the threshold and negative when it was above the threshold. This is explained by the fact that when education of the wife is relatively low, opportunities for higher earnings may be limited and an increase in education may actually result in lower wage rate as a consequence of self-selection (i.e., the wife may choose a less menial but less paying job as a result of higher education). Consequently, the wife has to work more hours in order to be able to eliminate the gap between husband's income and the family's target subsistence income. A test using an earnings function indeed showed that an increase in education below the threshold results in lower wage rate.

Finally, it is concluded that increasing the educational opportunities for women and expanding economic opportunities especially in areas where outmigration is rampant are most relevant in order to prevent economically forced outmigration and consequently to improve the standard of living of the people in these areas. Higher education enhances wife's attachment to the labor market through higher earnings and this can bring about a decline in the incidence of tied movers and consequently a further decline in the family's propensity to move. Likewise, such policy will also enhance fuller participation of women in the development process through greater labor force participation.

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Felicitas U. Evangelista, *Short-Term Agricultural Credit: An Empirical Validation of Its Role in Philippine Farm Households,* College of Business Administration, University of the Philippines, 1980.

Short-term borrowing in farm households was analyzed in this study to answer two questions: (1) What are the variables that determine the probability of borrowing ? and (2) What are the variables that determine short-term credit demand? The general hypothesis that borrowing in farm households is influenced more by consumption expenditures rather than by the availability or profitability of investment opportunities was tested empirically. Both the logit and regression analyses were used.

The empirical results showed that the borrowing behavior of farm households varies across different subsamples, i.e., provincial, income, borrowers' size and participation in the Masagana 99 Program.

The likelihood of borrowing is generally higher in the presence of irrigation facilities and in the absence of adequate liquid assets. A borrower also tends to continue borrowing for some time and it is only in the low income households, and in Davao del Sur that consumption is a significant variable.

The demand for short-term credit on the other hand is determined by the availability of investment opportunities in general and by consumption for a number of subsamples.

The implications of these findings are analyzed in terms of the short-term agricultural credit market and the measures that can be used to strengthen the demand for credit.

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Mario B. Lamberte, *Behavior of Commercial Banks: A Multiproduct Joint Cost Function Approach,* School of Economics, University of the Philippines, 1982.

This study has attempted to analyze the behavior of Philippine commercial banks. The recent contributions by various authors to the theory of the multiproduct firm provided the basis for analyzing bank behavior. In this framework, the bank was viewed as a producing unit rather than an investor. This approach recognizes the role of production technology in determining the optimal mix of outputs and inputs and size of bank operation.

Four competing models representing different production technologies were hypothesized. As revealed, the model that best describes bank behavior is that which does not allow differences in production structure among the years (i.e., 1977-1979), and assumes jointness in the production process and centralized decision-making. In other words, banks produce the different financial products (i.e., secured loans, unsecured loans, short-term loans, long-term loans, investments, demand deposits and other bank services) jointly and their choice of output mix depends on the input mix. Some information, like the marginal cost of producing each bank output, scale economies, demand for factor inputs, etc.,which generally interest both bank managers and regulatory authorities were then obtained from the underlying production technology of banks.

Since banks are multiproduct firms, it is necessary to make a distinction between savings in costs derived from expanding the scale of operation (economies of scale) from those derived from producing different products in combination (economies of scope). The existence of scale economies encourages bigness, while the existence of scope economies encourages product diversification. Results showed that a majority of banks had either completely or nearly exhausted the economies of scale. Thus, a policy encouraging banks to expand further their size through internal capital build-up and/or merger is indeed a less desirable policy option. However, economies of scope were found to exist in the production of short- and long-term loans. In other words, it was cheaper to produce both types of loans in combination rather than separately. This may serve as an argument for encouraging banks to produce both short- and long-term loans without necessarily requiring them to increase their size. However, there is a need to lift policies biased towards short-term loans so that banks can fully enjoy the economies of scope.

Some results of this study can aid us in understanding the role of bank behavior and monetary policies in determining the supply of money. According to one simple model of money supply determination, the supply of money varies positively with policy controlled reserve base but inversely with banks' free reserves. Free reserves vary inversely with the prices of funds used by banks as inputs in the production process; thus, money supply, in turn, responds inversely to the prices of funds. In this study, however, the demand for borrowed funds and deposits deduced from the production technology of banks was found to be inelastic. This means that changing the prices of borrowed funds (including rediscount rates) and deposits will leave the quantity demanded of such factor inputs virtually unaffected. In this case, therefore, the rediscounting policies of the Central Bank will be left powerless to influence money supply movements.

The current deregulation of interest rates will likely make banks' demand for deposits and funds borrowed from the money market relatively more price elastic. In view of this, it is worthwhile to set the rediscount rates at levels competitive with money market rates to make the demand for these funds also price elastic. Thus, banks' free reserves, which partly determine movements of the supply of money, will be responsive to market forces, as expressed through the market rates of interest on loans, deposits and money market instruments, and on Central Bank's policy decisions, as expressed through movements on the rediscount rates. In this regard, it is suggested that the rediscounting facility of the Central Bank be used more as an instrument for controlling movements of the supply of money and less as an allocative instrument.

Finally, the issue of using implicit or explicit pricing scheme on demand deposits was discussed. Currently, banks are using implicit pricing. It is, however, our view to use explicit pricing for reason of efficiency. The finding that banks realize a comfortable positive net implicit return on demand deposit accounts makes this shift in policy even more appropriate.

M.A. Theses

Prattana Uswarangsri, *The Structure and Behavior of Imports of Thailand: 1958-1976*, School of Economics, University of the Philippines, 1979.

This study aimed to estimate Thailand's import demand functions using price and income as major explanatory variables, at the aggregative and disaggregative levels, for the period 1958 to 1976. It likewise projected the import demands for the years 1977 to 1985. The estimation procedure used in this study centered on the import demand functions at the aggregated and disaggregated levels, distinguishing nine categories of import commodities based on the Standard International Trade Classification (SITC). The findings tended to confirm that relative price and activity variables could explain a large proportion of the variation in Thailand's imports.

By using the lag structure of relative price, the unit price effects were found to be higher with respect to the longer length of lag in prices for all commodities.

Relative prices were more elastic with the longer length of price lag for food (SITC 0) and beverage and tobacco (SITC 1). Imports of crude materials had price elasticity with value close to unity in absolute terms. The magnitudes of the responsiveness to prices were small for the imports of mineral fuels (SITC 3), animal and vegetable oils (SITC 4) and chemicals (SITC 5) which were price inelastic. However, machinery and transport equipment (SITC 7) was price elastic and basic manufactured goods (SITC 6) was price inelastic.

On the other hand, the income or activity variables were found elastic for the imports of beverages and tobacco (SITC 1), crude materials (SITC 2), mineral fuels (SITC 3), animal and vegetable oils (SITC 4) and chemicals (SITC 5). The others were income inelastic except for the imports of machinery and transport equipment (SITC 7), which appeared to be income elastic in equations with no lag in price variable, and inelastic in equations with some lengths of lag distribution in price. The aggregate demand for total imports was price elastic and income inelastic.

The study found out that the projections of import values obtained from the log-linear equations seemed to be more reliable than those from the linear equations, when compared with the actual import values in 1977. However, the import values from the linear equations were close to the target values of the years 1977 to 1981 than those from the log-linear equations. The target value, though, was observed to be underestimated for the year 1977. Thus the log-linear equation appeared to be more relevant for further uses. The projection figures estimated by the study indicated that in the future, imports of mineral fuels, and machinery and transport equipment would still maintain their importance, having the highest share in total import values, followed by crude materials, and chemicals, while the share of basic manufactured goods and miscellaneous manufactured goods may decrease with industrial development.

The study noted two alternative types of policies to effectively influence the behavior of imports. One would be policies involving changes in tariff or exchange rate and another would be those involving the relationship between income and import. The decision on what policies to use would depend on the import response of the commodity groups under consideration, i.e., the elasticity of import demand with respect to price and income. It was concluded that price policies should apply to the commodities with high price elasticities such as food, and beverages and tobacco; income policies should apply to those having high income elasticities, i.e., SITC 1 to 5 and sometimes SITC 7. In the aggregate level, price policies would be more effective than income policies when applied to total imports.

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Kiatichai Vesdapunt, *Export Supply Functions of Thailand's Rubber: 1957-1977*, School of Economics, University of the Philippines, 1979.

This study has attempted to estimate export supply functions for Thai rubber over the 21-year period 1957 to 1977. Specifically, it dealt with the export supply of Thai rubber to Japan, the United States, Singapore, the rest of the world, and the total exports. The Ordinary Least Squares (OLS) method was used to estimate the equations which were all expressed in linear form. The results were tested for serial correlation based on the computed values of the Durbin-Watson statistics. In cases of autocorrelation, the first-order Cochrane Orcutt iterative technique was applied for the starting value of the autoregressive coefficient.

The following findings were presented:

1) The price of Thai rubber export deflated by the wholesale price index of all commodities is a statistically significant variable affecting the export supply of Thai rubber to Singapore. The relative prices had elasticity values ranging from 0.01 to 0.02. A one baht change in the relative rubber export price to Singapore would cause 2.3 to 2.9 metric tons change in Thai rubber exports to Singapore.

2) The price of Thai rubber export deflated by the average rubber export price was an important variable affecting the export supply of Thai rubber to Singapore. The relative prices had elasticity values ranging from 0.37 to 0.57. A one percentage point change in relative export price would consequently cause a 0.63 to 0.65 thousand metric ton change in exports to Singapore.

The export supply of Thai rubber to Japan, US, the rest of the world; and of total exports were found to be insignificantly related to the price variables used in the study.

3) Domestic rubber production appeared to be the major determinant o Thai export supply to Japan, the US; and of total exports. The output elasticit values of exports to Japan ranged from 1.73 to 2.05: those of exports to the U ranged from 1.32 to 2.52; and those of the total exports were close to unity an ranged from 0.98 to 1.03. A one percentage point increase in domestic Thai rubbe production will result in : a) an increase of 1.44 to 1.58 thousand metric tons i exports to Japan; b) a change of 0.63 to 0.70 thousand metric tons in exports t the US; and c) will lead to 1.87 to 1.97 thousand metric tons in total exports.

The export supply functions for Singapore and the rest of the world showe an insignificant relation with domestic output of Thai rubber.

4) Both the domestic wholesale price deflated by the wholesale price inde of all commodities and the domestic rubber wholesale price deflated by the averag rubber export price were found to be insignificant variables in explaining the b havior of Thai rubber exports to each of the importing countries.

This study assumed infinite elasticity of demand for Thai rubber by eac importing country and also in the aggregate while the earlier study of import d mand by Tatirungsunsook assumed infinite elastic supply of Thai rubber. This stud thus recommended further research employing a simultaneous analysis of the supp of and demand for Thai rubber exports in the context of a world economy mod of rubber production and trade to improve the analytical framework. Also, sin Thai rubber exchange earnings showed sharp fluctuations from year to year, it w suggested that this problem be investigated based on a more elaborate model Thai rubber exports incorporating policy instrument variables affecting Thai e ports of rubber.

Citing a finding of an ESCAP study that the prospects of Thai rubber expo appear bright, the study stated that rubber exports would continue to play an i portant role as a foreign exchange earner in Thailand and would have significa bearing on the economic development of the country. Likewise, since the gove ment had been promoting the use of high-yielding varieties of rubber, the rubb production in Thailand could be expected to show an increasing trend in the fo seeable future.

Miguela F. Villanueva, *A Domestic Resource Cost Analysis of the Pulp and Paper Industry,* School of Economics, University of the Philippines, 1979.

The primary objective of this study was to evaluate the competitiveness of the pulp and paper industry using the domestic resource cost (DRC) criterion. The "direct input" method (Bruno, 1972) was used, given the prevailing structure of protection in each of the years studied. This method assumes that each material input is allowed to be imported in the proportion to total supply that actually prevailed in those years. The years covered by the study were 1969, 1974 and 1977. For 1969 and 1974, input-output data provided by the National Census and Statistics Office (NCSO) were utilized, and for 1977, data gathered from the survey of 12 selected firms in the industry, were used. The effectiveness of government policies on the development and performance of the industry was also analyzed using data from a survey of the firms.

The findings of the study indicated that except for the pulp, paper and paperboard manufacturing sector, the industry lost its comparative advantage from 1969 to 1974. The findings based on establishment data showed that the Philippines appeared to have comparative advantage only in the production of pulp. Furthermore, the change in the competitive position of the industry was shown to be due primarily to increases in costs and change in the implicit tariffs. On the other hand, the analysis of DRC variation across firms using age of plant, capacity utilization rate and factor intensities as explanatory variables revealed that the most significant explanatory variable of interfirm variation in DRC was factor intensity in production.

Regarding the effectiveness of existing government policies affecting the industry as well as the industry perception of those policies, the study presented the following conclusions:

i) Though firms consider some tax incentives offered by the Board of Incentives (BOI) as very significant, too much time and expenses involved discourage them from availing of those incentives.

ii) While some government regulations may have hampered the growth of the industry, very few of the firms would consider these regulations as very important to greatly affect their future investment decision should these regulations be withdrawn or modified.

iii) The firms suggested that the government can help the industry by lowering taxes. Such step may take the form of a longer time period by which a registered firm may avail of BOI incentives.

To solve the economic inefficiency of the pulp and paper industry, the study recommended a couple of measures. One was the lowering of the rates of protection considering that the loss of competitiveness of the industry from 1969 to 1974 was attributed mainly to increases in the implicit rates of protection of the sectors, which in turn were caused primarily by an increase of the tariff rates in 1973. Furthermore, a comparison of DRC with EPR estimates for 1969 and 1974 had shown that higher costs were incurred by those sectors which were given higher protection in 1974.

The study also stated that at the firm level, the positive relationship between DRC and capital intensity suggested the need to restudy the technical aspects of the industry. The BOI could encourage the registration of less capital-intensive firms. It was mentioned that the mechanical method of pulp manufacturing involves a minimal use of capital and is thus more labor-intensive than the chemical method. The BOI could encourage this type of economic activity via additional incentives or some forms of premium. The study thus proposed an evaluation of a project involving pulp and paper manufacturing using mechanical pulping.

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Mercedita C. Agcaoili, *Consumption Patterns of Farm Households,* School of Economics, University of the Philippines, 1980.

The paper's objective was to determine the demand behavior of the rural households in the Philippines. Measures of demand responses such as marginal budget shares, total expenditure and price elasticities, marginal and average propensities to consume, etc., were estimated. The main thrust, however, was to determine the effects of socioeconomic variables such as household size and tenurial status on the demand parameters.

The Linear Expenditure System (LES) was employed in the study. In its expenditure form, the model is expressed as follows:

$$p_i x_i = p_i a_i + b_i (y - \underset{j}{\epsilon}\, p_j \alpha_j) \qquad i, j = 1, 2, \ldots, n$$

where $p_i x_i$ denotes expenditure on good i, $y = \underset{i}{\epsilon}\, p_i x_i$ denotes total expenditure and the $a_i's$ and $b_i's$ are the subsistence and the marginal budget share parameters, respectively. The equation says that the consumer first uses up a certain subsistence amount of the total expenditure denoted by the vector $a = (a_1, a_2 \ldots, n)$ at current prices and then distributes the remainder over the set of available commodities in a certain fixed proportion denoted by the elements of $b = (b_1, b_2, \ldots, b_n)$.

Model fitting was carried out using the income and expenditure data gathered from the three outreach sites of the International Rice and Research Institute. The cross-sectional data covered three years and included 20 expenditure items and nine (9) sources of income of about 120 farm households. The observations were grouped further by household size (i.e., large and small) and by tenurial status (i.e., owner-part-owner and share-leaseholder). The model was fitted in each of the 117 sub-groups defined.

The key findings showed that increases in total expenditure among rural households tended to decrease the marginal budget shares of food commodities and to increase those of farm inputs. This seemed to imply the growing acceptance of modern technology by small farmers. The results also indicated the presence of economies of scale in household consumption especially those on food commodities. It was likewise evident that household size affected the reaction of households towards quality differentials of commodities. Furthermore, the parameters derived for personal expenditure item validated the rural household's high regard for education.

Based on the results of the research study, two major recommendations were put forward:

i) that government policies be geared such that increased production of a particular commodity can be attained with the use of new-improved technology and inputs provided that farmers (small and large) are convinced that they can realize income increase; and

ii) that incentives be provided for enrollment in areas (disciplines and/or skills) that have been identified as necessary to support or provide the trained manpower needs of given sectors that are supposed to provide the lead towards more rapid economic growth.