DEMAND FOR LIFE INSURANCE IN BARBADOS: AN EMPIRICAL TEST

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Introduction

The importance of non-bank financial institutions in the economic development of developing countries is well known (See Gurley and Shaw (1960) and Goldsmith (1969)). Yet, there have been few studies on this area in the Caribbean economic literature. Odle's (1972) study of Guyana, Jamaica and Trinidad provides the main authoritative guide on non-banks operations while Thomas (1965) and Ramsaran (1983) discuss them in a general review of the financial sectors of Guyana and the Bahamas respectively. Odle's (1974) study on pension funds, Francis and Lunn's (1985) and Bourne and Bailey (1977) studies of the insurance industry remain the other main contributions.

There is a dearth of such studies for Barbados, the exception being Worrell and Prescod's (1983) analysis on the development of the post war financial system. In this paper we attempt to bridge this gap by examining the growth of and demand for life insurance in the Barbadian economy. In Section I we present a brief discussion on trends in the industry. Section II describes the model, which we use to estimate the demand for life insurance, drawing on the works of Fortune (1973), Headen and Lee (1974), Bourne and Bailey (1977) and Campbell (1980). The results of the tests are reported in Section III. In Section IV conclusions are made.

I. Trends in Life Insurance Industry

After the banking sector, the insurance industry is the largest private sector financial institution in Barbados, attracting savings and channeling these funds into productive areas in the e onomy. Established since 1840, it has grown rapidly in recent years with assets rising by 14-15% per annum since 1964[1]. The loan portfolio, always the major segment of the asset structure, now accounts for over 43% of all assets. Mortgages account for about two-thirds of these loans. Investments in government paper have not shown any rapid growth and their share which was almost 30% in 1964 was less than 10% twenty years later. There are no mandatory controls on insurance companies as there are on commercial banks and this pattern of investment is a direct result of this feature of the financial system.

The growth of the asset base is an indication of the successful penetration of housholds by the industry. By 1984 three of every ten adults owned an insurance policy reflecting the increasing usage of policies as collateral, the strengthening of the intermediation process itself and the general rise in

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[1] Published data for the period 1964- does not fully reflect the size of the industry as companies were delinquent in making returns. The range is calculated from the estimate that the twelve reporting companies accounted for about 76% of the industry. Odle (1972) stresses the difficulties encountered by researchers in obtaining consistent and reliable data on non-bank financial institutions in the Caribbean.

incomes. Over the 1964-84 period, the number of policies rose by 4½%- 6% p.a., well below the 9% increase for the 1978-84 sub-period. This growth in demand took place in spite of a weakening of the economy and a higher level of discontinuation of policies after 1981.

The increase in the termination of policies resulted mainly from the build-up of assets of policy loans. Individuals tend to borrow on their policies when market interest rates rise above the fixed rates payable on policy loans. It is often cheaper to discontinue these policies when arrears build-up and purchase new insurance than to erode the coverage on existing policies.

Measured as the mean value of discontinued policies to those in force at the end of the previous year, 7.4% of all policies were discontinued between 1979-84. Data for 1965 and 1966 reveal discontinuation rates of 13% and 8.9%, respectively. Industry sources suggest that a 10% termination rate is acceptable. The ratio of new policies to discontinued policies of 2.3 for the period 1978-84 is indicative of the continued expansion of the industry. However, the growth of insurance coverage (17.3% p.a.) fell within the range for the period 1964-84 (16%- 17½% p.a.). The growth in premium income (11½%- 13% p.a.) is less than proportionate to the rise in insurance coverage and while there is no available data on movements in premium rates it is reasonable to beleive that this trend partly reflects a younger clientele.

Table 1

Period	Average Value (BDS$) New Policies	Discontinued Policies	All Policies	% Discontinued All Policies$_{t-1}$
1978	27340	17957	20365	n.a.
1979	34109	23628	22253	7.2
1980	37406	22658	24616	7.0
1981	40268	27442	27278	6.9
1982	44205	32732	29188	8.4
1983	45182	35911	30666	7.9
1984	44072	40285	31903	6.9

II. Model

Theoretical approaches to the demand for life insurance view it as consisting of components of protection, savings and various options (Smith (1982)). However, Fortune (1973) notes that even if consumers recognize the several components of the package the data does not afford the opportunity to separate the motives. Thus a logical successor step to the analysis is to combine the approaches to yield fuller explanations of the demand for life insurance. (See Headen and Lee (1974) and Bourne and Bailey (1977))[1].

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1. For a discussion of models that emphasize the protection motive see Fortune (1973) and Campbell (1980). The saving motive is discussed by Neumann (1969).

Given this, our basic model is expressed as

$$PR = B_0 + B_1 y + B_2 r + B_3 p^e + B_4 t + B_5 w + B_6 n + u \quad (1)$$

where PR represents demand for life insurance, y is dispoasble income, r is a bank deposit interest, p^e is the expected price level, t is a tax incentive to purchase insurance, w is nonhuman wealth, n is household formation and u is a portmanteau variable that captures all other factors that may affect the demand for life insurance e.g. the level of social security benefits.

The income variable acts as a budgetary constraint which determines the consumer's capacity to purchase insurance. The expected sign is positive as rising incomes increases the wealth to be protected. Bourne and Bailey note that a high liquidity preference reduces demand and that this is more common as income rises. This seemingly preverse result seems tenable in a situation where returns on other assets are extremely high vis a vis life insurance, but the positive impact of income should outweigh this effect.

If insurance is used as part of a consumer's investment strategy, returns on alternative financial assets should impact on insurance purchase decisions. Moffett (1979) argues that insurance companies should disclose the effective rate of return for each policy year to aid consumers in decision-making. The return on insurance policies are generally much lower than on other investments, suggesting other motives than investment income affect insurance demand. However, rising deposit rates do impact on the return which insurance policies offer. This enables insurance companies to maintain their competitiveness. As a result, higher demand for insurance may parallel higher deposit rates. This outcome hinges on the size of the increase in the return on insurance investment. It has been suggested that higher interest rates often lead to a reduction in insurance as consumers borrow against their policies which carry lower rates and as we have noted above, subsequently terminate such policies. A rise in interest rates may also reduce the attractiveness of cash value life insurance as a saving medium.

The impact of prices on life insurance demand is also uncertain. Rising price levels may encourage an increase in insurance as consumers seek to maintain the level of protection. However, inflation reduces real income and depresses the value of assets like life insurance. In this situation, there may be a tendency to buy other fixed assets such as real estate. Models have tried to relate the demand for life insurance directly to the price of insurance (see Babbel (1985)) but these studies have been limited by the lack of data. Theoretically, the impact of own price is questionable in a small open economy like Barbados. While price search is not difficult owing to the small number of companies non-economic factors such as the insurance agents' marketing skills, personal contacts with consumers, indigenisation of the company and sometimes whether the company is a stock or mutually-owned play a decisive role in the choice of policy.

The demand for life insurance is also related to the amount of nonhuman (inheritable) wealth possessed by the insured. The sign of this relationship is also ambiguous and depends upon the shape of the absolute risk aversion function of the insured consumer (see Fortune (1973)). Given a negatively sloped demand curve the rise in nonhuman wealth induces a decline in the optimum quantity of insurance in force. However if the demand curve had been positively sloped the rise in nonhuman wealth would raise the optimum quantity of insurance. An increase in household formation, by extending the number of insurable units tends, ceteris paribus, to augment the demand for life insurance protection.

III. Empirical Results

Annual observations covering the period 1964-1984 are used to estimate the model. The dependent variable is proxied by life insurance premium income following the work of Bourne and Bailey (1977). Data on other alternatives such as the number and value of life insurance policies in force were too fragmentary to make reliable inferences and consequencely were not used. The interest rate employed is the twelve-month time deposit rate calculated as an average of the maximum and minimum values. The tax variable is a 'dummy' given the value 1 in the years (1971, 1978, 1979 and 1984) when there were changes in the provisions for tax exemptions of premiums paid to life insurance companies and zero otherwise. The measure of wealth is financial assets minus financial liabilities i.e. financial net worth. Data for household formation was unavailable so we used population as a proxy. Income is represented by real personal disposable income where the yearly average consumer price index (March 1980=100) is the deflator. This latter variable is also employed to generate the expected price level. Following Barker and McClean (1985), it was assumed that individuals form their expectations based on their inherent appreciation of positions, speed and acceleration. Mathematically, the expectations formula is

$$ {}_tP^e_{t+1} = P_t + d\,P_t + 0.5\,d^2\,P_t $$

All the variables in the model are in log-linear form except nonhuman wealth. The estimating technique is Ordinary Least Squares. The results are shown in Table 1.

Overall, the results are quite encouraging. The explanatory power of the model is quite high ($\bar{R}^2 = 0.98$) and there is no evidence of autocorrelation judging by the Durbin-Watson (DW) statistic. Moreover, all the variables except wealth and the household formation variable are significant at the 5% level; the wealth variable is significant at the 10% level. Although, these two variables did not affect the explanatory power of the model, there is some evidence of misspecification as seen by the D.W. statistic. This implies that they are important to the specification.

Our study agrees with Fortune (1973) conclusion that consumers confidence is inversely related to the expected rate of inflation. This observation seems plausible given the highly unstable price conditions of recent years. A substantial and largely unanticipated acceleration of inflation can reduce through erosion of real income the individual's ability and/or willingness to buy life insurance. Bourne and Bailey (1977) study of Jamaica, however, indicates that a moderate annual increase in prices will tend to stimulate life insurance purchases as individuals attempt to augment existing coverage.

The positive sign of the deposit rate suggests that life insurance companies are prepared to maintain their competitive edge. Thus they will increase their rate of return when deposits augments. A possible explanation for the insignificance of the household formation variable is that while the rate of household formation may exhibit an upward trend due to normal population growth it is also highly cyclical as labour force participation and marriages as well as divorces are postponed during recessions. (see DePamphilis (1977)).

Conclusion

Researchers in the Caribbean must focus on the non-banking sector to enable them to better forecast the economic impact of its activities. This preliminary investigation on Barbados suggests that insurance demand is on the rise, the result of changing socio-economic factors. The results are generally supportive of our underlying model but important questions remain unanswered.

i) Can the Barbados experience be generalised for the rest of the Caribbean?

ii) What macro-economic impact has the movement towards increased saving via insurance had in these countries?

Table 1

ORDINARY LEAST SQUARES
ESTIMATES OF THE DEMAND
FOR LIFE INSURANCE

Equation	Constant	Y	r	p^t	t	w	n	$\bar{R}^2$	s.e.	D.W.
1	-8.91	1.63	0.24	-1.06	0.13	0.001	1.38	0.983	0.100	1.85
	(-0.97)	(4.76)	(2.31)	(-2.51)	(2.05)	(1.76)	(0.86)			
2	-2.74	1.86	0.28	-1.32	0.15			0.983	0.110	1.63
	(1.23)	(5.26)	(2.62)	(-3.01)	(2.35)					
3	-1.21	1.63	0.22	-1.04	0.12	0.001		0.983	0.099	1.63
	(-0.56)	(4.79)	(2.18)	(-2.49)	(1.93)	(2.09)				

Note: Figures in brackets are t-statistics

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