

Life Insurance Ownership of Households: Term and Cash-value Life Insurance

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Abstract : This study attempted to identify the factors related to life insurance focusing on two different types of life insurance: term life insurance and cash-value life insurance. Based on the human capital, bequest motives theories, and decision under risk, a conceptual framework was developed. The results showed a support for the conceptual framework indicating that human capital, bequest motives as well as attitude toward risk were important factors in predicting each of life insurance ownership. In addition, the factors related to each type of life insurance were different. For term life insurance, the variables representing households' bequest motives were found to play an important role while the variables reflecting human capital theory had significant impact on cash-value life insurance holding.

Key Words : Life insurance, term life insurance, Cash-value life insurance

I. Introduction

Household faces various kinds of risks and uncertainties throughout their lifetime such as uncertainty about future labor income or capital income, investment opportunities, and age of death (Merton, 1975). Among these examples of uncertainties, age of death is one of the critical uncertainties that greatly affects households in both psychological and financial aspects. In particular, unexpected death of the primary wage earner and the associated income loss bring about significant financial problems to the households.

Therefore, a critical decision that most households should make is the life insurance holding decision (Goldsmith, 1983) to prepare the unforeseen situations in the future.

Under life time uncertainty, life insurance has been considered one of the important financial instruments to allocate resources in order to protect family members against from possible risk (Yaari, 1965). In addition, life insurance is an essential element of a long-term financial plan for most households (DeVaney & Keaton, 1994; Forster & Carson, 2000). As an essential financial instrument, households spend significant portion

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of their disposable income on life insurance (DeVaney & Keaton, 1994).

While life insurance retains an important position either in a financial plan (Forster & Carson, 2000) or in expenditure for most households, the decision on life insurance is not a simple process. The decision involves the evaluation of financial needs throughout life and future financial resources not only for the whole household but also for beneficiaries under uncertainty.

Although the decision on life insurance is complicated, a decision to have life insurance as a financial tool against uncertainty is one of the critical decision for most households. Thus, it is important to understand what factors determine the life insurance decision of households. In light of the importance, some previous studies examined life insurance demand (e.g. Browne & Kim, 1993; Burnett & Palmer, 1984; Hau, 2000; Lewis, 1989). However, many of the studies examined life insurance focusing on a specific group needs or on testing a specific theory. In addition, the previous studies did not consider the different types of life insurance when examining the life insurance decision of households. To fill the gap in the literature, this study attempted to examine the determinants related to the two types of life insurance holding decision based on a conceptual framework derived from theories explaining life insurance demand. The result of this study will provide a better understanding of life insurance demand of households. Also the results will be useful information for insurance industry as well as financial educators and planners.

II. Literature Review

1. Theoretical Background and the Previous Studies

This section reviews some of the major theories explaining life insurance demand and the related literature. The focus of the theories is somewhat different among the theories but the theories share an idea that the decision to have life insurance is a rational reaction upon uncertain life time when the primary wage earner dies. Among the first, Yari (1965) explained consumer behavior under uncertain lifetime using two models: Marshallian model and Fisherian model. The former emphasized the bequest motive and the latter emphasized the collateral motive to explain life insurance. This theory explained that a consumer purchased life insurances to increase his/her expected lifetime utility. Lewis (1989) expanded the Yari's (1965) model but focused on the beneficiaries' point of view. According to Lewis (1989)'s model, the demand for life insurance of the husband did not depend on the insurer's bequest motive but depended on the survivors' preferences.

Some of the approach emphasized human capital and others emphasized bequest motive. The former approach viewed the demand for life insurance as equal to the loss of human capital when the wage earner died (Campbell, 1980). Thus, accumulated wealth can be a substitute for human capital or life insurance. Focusing on bequest motive, Bernheim (1991) proposed that bequest motives could change attitudes toward

insurance. That is, with the increase in bequest motive of the insured person, the probability of holding life insurance increased.

The empirical examination of the theories suggested a support for these theories. Lewis (1989) found that household income and the characteristics of beneficiaries such as number of children and the age of the offspring were significantly related to the life insurance ownership of the husband (Lewis, 1989). Integrated with a household's bequest motive and the level of risk aversion in the model, Campbell (1980)'s analysis showed that as accumulated assets increase, if the household was not risk averse, and it had a negative bequest motive, the demand for life insurance decreased. In addition, as age increased the probability of holding term life insurance decreased since human capital potential decreased but accumulated assets increased. Consistent with the bequest motive, Bernheim (1991) found that the presence of children increased the probability of holding life insurance. Similarly, Meier (1998) found that the demand for life insurance increased with a rising degree of altruism.

Using the 1986 Survey of Consumer Finances, DeVaney and Keaton (1994) examined purchasers and non-purchasers of whole life insurance. The study constructed three models based on household composition; married couples, singles, and singles with family, and examined the models using classification and regression trees method (CART). The results revealed that net worth and income were important determinants of whole life insurance purchase behavior for each group, while race, education, and household stage variables were relatively unimportant. Hau (2000) examined

life insurance demand by retired singles. This study examined the life insurance demand only for retired singles using a death-contingent claim model because of the sample of this study, applying a generally acceptable theory of life insurance to this study was not plausible. Hau concluded that financial wealth variables played an important role relative to demographic and personal characteristics in explaining the life insurance holding by retired singles.

2. Conceptual Framework

Based on the theories and the previous literature, the conceptual framework of life insurance was suggested as follows:

$$\text{Prob}(L_h) = f(\text{HC}, \text{BM}, R; \text{FR})$$

Where, *HC* represents human capital, *BM* is bequest motive, *R* is attitude towards risk, and *FR* is financial resources. That is, this model suggested that the probability of holding life insurance is a function of the insured person's human capital, bequest motive, and attitude towards risk given different level of financial resources of households. The decision on life insurance is a decision under risk; hence, attitude toward risk was included. In this model, financial resources could act as an alternative resource to life insurance as well as the substitute for human capital.

3. Type of Life Insurance

This study examined two types of life insurance. Although there are different types of life insurance policies, the term life insurance and cash-value life insurance are the major types of life insurance that

have distinctive features. First, term life insurance provides only death benefits when the insured person dies within the term. A term policy has a face value, which is the dollar value of protection as listed in the policy. Term life insurance needs to be renewed after the specified term is over and may require a medical examination when they are renewed. The premium will be raised as you get older or if you have health problems. Compared to cash value life insurance, the premium of term life insurance is less expensive. Second, cash-value life insurance provides death benefits as well as benefits prior to death through the accumulation of cash value in the policy. A cash value is the amount of the investment in the life insurance and it belongs to the owner of the policy. Different from term life insurance, cash value life insurance does not need to be renewed and the premium is usually constant, but the premiums for cash-value life insurance are higher than those for term life insurance. When the insured person dies, face value not a cash value accumulated in the policy will be paid (Garman & Forgue, 2000).

Although the two types of life insurance have different characteristics, previous studies that examined those two separately are limited. In this study, the conceptual model of life insurance was examined separately for the two types of life insurance.

III. Methodology

1. Research Questions

1) Are the term life insurance holders and cash-

value life insurance holders different in terms of their human capital, financial resources, bequest motives, and risk?

2) What are the determinants of the two types of life insurance decision: term life insurance and cash-value life insurance?

2. Data and Sample

In order to examine the above research questions, this study used data from the 1998 Survey of Consumer Finances. The SCF is a nationally representative data set and has information on both the term life insurance and the cash-value life insurance. In addition, the data include some information such as a household's bequest motive and attitudes toward risk, which are important variables in this study. For the analysis of this study, the entire sample in the 1998 SCF (4,305 households) was used to examine life insurance decision of households. Since the SCF oversamples relatively wealthy families, the sample was weighted to be able to represent the whole population.

3. Measurement of Variables

Dependent Variables. Table 1 presents the measurement of variables. The two dichotomous variables were used as dependent variables and they were coded as 1 if the household had term life insurance, and 0 if otherwise; 1 if the household had whole life insurance, and 0 if otherwise.

Independent Variables. The theories explaining life insurance holding encompass human capital theory, bequest motive theory, decision making

<Table 1> Measurement of Variables

	Measurement
Dependent Variables	
Individual term policy	1 if holding individual term policy, 0 if otherwise
Cash-value life policy	1 if holding cash-value life policy, 0 if otherwise
Independent Variables	
<i>Human Capital</i>	
Age	Age in years
Education	
Less than high school (<12)	1 if yes, 0 if otherwise
High school (=12)	1 if yes, 0 if otherwise
Some Colleges (13-14)	1 if yes, 0 if otherwise
College degree or higher (16<)	1 if yes, 0 if otherwise
Health Status	
Excellent	1 if yes, 0 if otherwise
Good	1 if yes, 0 if otherwise
Fair or poor	1 if yes, 0 if otherwise
Race	1 if White, 0 if otherwise
Household head's employment status	1 if employed, 0 if otherwise
<i>Financial Resources</i>	
Income (\$)	Gross income (before deduction taxes)
Debt (\$)	Housing debt + debt for other residential property + consumer debts
Homeownership	1 if owner, 0 if otherwise
<i>Bequest Motives</i>	
Attitudes toward leaving bequest	1= not important to 5= very important
Number of children	Number of children in the household
Marital status	1 if married, 0 if otherwise
Life expectancy	Age that the respondents expect to live
Spouse's employment status	1 if employed, 0 if otherwise
<i>Risk</i>	
High	1 if take risk above average, 0 if otherwise
Average	1 if take average risk, 0 if otherwise
No risk taking	1 if take no risk, 0 if otherwise

under risk, and other socio-economic factors. Based on the previous studies, independent variables were categorized into four groups to represent the theories and relevant factors.

The literature suggested that the components of

human capital were age, education, health status, and characteristics of the person. Thus, human capital factors included household head's age, education, health status, race, and employment status in order to reflect the theory. Financial

resource factors included household income, total debt, and homeownership. Net worth was excluded due to the high correlation with household income and total debt. Household income and total debt were measured as continuous variables. Income was the total gross household income before tax. Total debts were sum of all debt secured by residential property and consumer debt.

The previous research suggested that the household's bequest motive was a function of number of dependents, the probability of their deaths, the dependents' future need of economic support, the households' psychological characteristics, education, and age (Campbell, 1980). Therefore, to capture the households' bequest motive, five variables were included. Number of children and marital status reflected number of dependents in the households. In order to represent the households' psychological characteristics affecting bequest motive, attitudes toward leaving bequest were included. It was measured as an ordinal variable: from 1 if respondents responded that leaving bequest is very important to 5 if respondents answered that leaving bequest is not important to the households. Since this variable was coded in descending order, it was recoded from 1, it's not important, to 5, it's very important. The probability of their deaths was represented by life expectancy, measuring self-reported expected age that the respondents live. Spouse's employment status was included since this variable may indicate the need for future economic support. The last factor affecting life insurance holding is attitude toward risk. Respondents' attitude toward risk was categorized into three groups: high risk takers, average risk

takers, and no risk takers.

4. Analysis

Chi-square test and t-test were conducted to compare the characteristics of term life insurance policy holders and cash-value life insurance holders. In order to examine term life insurance and cash-value life insurance holding decision, logistic regression analysis was used. This method generates maximum likelihood estimates of parameters when the dependent variable is qualitative in nature and must be represented by a binary variable (Kennedy, 1998). When the dependent variable is a binary variable, the error term is not normally distributed and may not be constant. Moreover, the mean responses should be constrained between 1 and 0, since the response function represents probabilities; thus ordinary least square regression is not appropriate. In some cases, if the sample size is large enough to handle nonnormal error term distribution, the method of least squares can be used. Additionally, weighted least squares could be an alternative method to handle heteroskedasticity problem (Weisberg, 1985). However, due to the third constraints described above, logit analysis was the most appropriate method for this study.

Therefore, the following empirical model was estimated separately for term life insurance and cash-value life insurance.

$$\ln(P_i / (1-P_i)) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 \quad (1)$$

Where, P_i is the probability that the i th household holds life insurance (either term policy

or cash-value policy), X_1 is human capital, X_2 is financial resources, X_3 is bequest motives, and X_4 is risk, respectively. β s are the vector of the corresponding coefficients.

IV. Results

1. Differences between the Two Types of Life Insurance Holders

Table 2 presents the characteristics of term life insurance holders versus cash-value life insurance holders. Among the households, 53 % of the households held term life insurance and 37% percent held cash-value life insurance. Except the spouse's employment status, term life insurance holders and cash-value life insurance holders were significantly different in terms of their human capital, financial resources, bequest motives, and attitude towards risk.

Compared to the term life insurance holders, cash-value life insurance holders were slightly older. The education level for cash-value life insurance holders was higher than term life insurance holders. Also, cash-value life insurance holders were healthier than term life insurance holders. Among the life insurance holders, the proportion of whites was higher for cash-value life insurance compared with the term life insurance holders whereas the proportion of the employed was higher for term life insurance holders compared with the cash-value life insurance holders.

In terms of financial resources, the results indicated that the level of income of the cash-value

life insurance holders was higher than the income level of the term life insurance holders. But the cash-value life insurance holders had a higher level of debt compared with the cash-value life insurance holders. More than 80% was a homeowner among cash-value life insurance while 65% of term life insurance holders was a homeowner.

Cash-value life insurance holders had less number of children on average, had more favorable attitude toward bequest compare to term-life insurance holders. The percentage of married households was higher for cash-value life insurance holders than term life insurance holders. Relatively, term life insurance holders were not favorable to take risk.

2. The Results of Logistic Regression

Term Life Insurance. For term life insurance holding, among the human capital factors, the household head's education level and employment status were significant. If the households' head had at least some college education, then they were more likely to have term life insurance than the households headed by a person without a high school education. The odds increased by 56% and 47% for households with some college education and college degree or more advance degree, respectively. The households with working head were more likely to have term life insurance than the households with unemployed head. The odds of holding term life insurance of the households with working head increased by 64%, compared to those with unemployed head. Financial resource factors showed a strong association with the term

<Table 2> Comparison Characteristics of Term Life and Cash-value Life Insurance Holders

	Term (51.43%)	Cash-value (36.52%)	Chi-square / t-test
<i>Human Capital</i>			
Age	47.62 (24.26)	52.06 (22.78)	-10.70***
<i>Education</i>			
Less than high school (<12)	12.65 %	8.27 %	50.98***
High school (=12)	23.85 %	21.06 %	
Some Colleges (13-14)	20.64 %	15.65 %	
College degree or higher (16<)	42.86 %	55.03 %	
<i>Health Status</i>			
Excellent	35.65 %	38.87 %	14.42***
Good	45.22 %	47.01 %	
Fair or poor	19.13 %	14.12 %	
<i>Race</i>			
White	79.75 %	88.74 %	47.31***
Non-white	20.25 %	11.26 %	
<i>Household head's employment status</i>			
Employed	78.31 %	72.65 %	13.40***
Unemployed	21.69 %	27.35 %	
<i>Financial Resources</i>			
Income (\$)	60,749.78 (148,186.01)	70,568.37 (161,189.24)	-3.01**
Debt (\$)	57,934.62 (124,931.80)	61,582.13 (121,048.71)	-7.57***
<i>Homeownership</i>			
Owner	65.33 %	82.89 %	124.77***
Renter	34.67 %	17.11 %	
<i>Bequest Motives</i>			
Attitudes toward leaving bequest	2.97 (2.34)	3.17 (2.05)	-3.70***
Number of children	0.75 (1.70)	0.62 (1.39)	2.34*
<i>Marital status</i>			
Married	61.34 %	74.75 %	64.13***
Non-married	38.66 %	25.25 %	
Life expectancy	81.27 (18.35)	81.97 (15.59)	-2.92 **
<i>Spouse's employment status</i>			
Employed	39.37 %	39.50 %	0.071
Unemployed	60.03 %	60.50 %	
<i>Risk</i>			
High	29.36 %	36.77 %	25.88 ***
Average	43.18 %	42.11 %	
No risk taking	27.46 %	21.12 %	

Note. * P <.05 ** P <.01 *** P <.001

life insurance holding decision. Income was negatively related to term life insurance, and home owners were more likely to have term life insurance. Among the bequest motive factors, number of children, marital status, and spouse's employment status showed positive and significant impact on term life insurance holding while attitude and expectation variables were not significant. The households with more children and married households were more likely to have term life insurance, indicating a positive association between number of dependents and term life insurance holding. Spouse's employment status was positively related to term life insurance, showing that the households with working spouse were more likely to have term life insurance. This was contrary to the hypothesis. Spouse's employment could be considered as additional financial support in the future when primary wage earner dies so that it was hypothesized to be a substitute for term life insurance. However, the positive results suggested that labor force participation by the spouse increased his or her own life insurance holding (Gandolfi & Miners, 1996), resulting in increasing the whole household's life insurance holding. The results also indicated that attitude toward risk was a significant factor to predict term life insurance holding. Compared to the high risk takers, the no risk takers were less likely to have term life insurance.

Cash-Value Life Insurance. The results suggested that all of the human capital factors were significantly related to cash-value life insurance except household head's employment status. As household head's age increased, the probability of holding cash-value life insurance increased. But

the odds of holding cash-value life insurance increased by only 1.8% for each year of age. Consistent with the previous studies (Ferber & Lee, 1980; Gandolfi & Miners, 1996), if the household head had at least high school education, the households were more likely to have cash-value life insurance. The household heads' excellent or good health status led to more cash-value life insurance. The odds of holding cash-value life insurance increased by 37% and 34% for households with excellent health status and for households with good health, respectively. The households headed by Whites were more likely to have cash-value life insurance. Financial resource factors were also important determinants of cash-value life insurance holding decision. Income and total household debts and home ownership were positively related to cash-value life insurance holding. Consistent with previous studies (Gandolfi & Miners, 1996; Goldsmith, 1983), the higher the income, the more likely households were to have cash-value life insurance. Consistent result with Ferber and Lee's (1980) study, the higher debts the households had, the more likely they were to have cash-value life insurance. It is plausible because cash-value life insurance allows households to be able to borrow money against the policy; thus, the households that had cash-value life policy could incur more total debt than term life insurance holders. Consistent with the previous study (Ferber & Lee, 1980; Gandolfi & Miners, 1996), home owners were more likely to have cash-value life insurance than renters. Homeownership had great impact on cash-value life insurance holding, suggesting that the odds of holding cash-value life insurance by home owner

increased by 91%, compared with renters. Among the bequest motives factors, attitude toward

leaving bequest and marital status were found to be significant. The households with a positive attitude

<Table 3> Results of Logistic Regression for Two Types of Life Insurance Ownership

Variables	Term Life Insurance			Cash-Value Life Insurance		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
<i>Human Capital</i>						
Age	-0.003	0.003	0.997	0.018***	0.003	1.018
Education (Less than high school)						
High school	0.191	0.111	1.210	0.358**	0.128	1.431
Some Colleges	0.445***	0.121	1.560	0.288*	0.138	1.334
College degree or higher	0.387**	0.114	1.472	0.474***	0.129	1.607
Health Status (Fair or poor)						
Excellent	-0.119	0.105	0.888	0.314**	0.115	1.369
Good	-0.157	0.094	0.855	0.289**	0.103	1.335
Race (Non-white)						
White	-0.004	0.089	0.996	0.242*	0.103	1.274
Household head's employment status						
Employed(Unemployed)	0.494***	0.086	1.639	0.032	0.096	1.032
<i>Financial Resources</i>						
Income (\$)	-2.41E-7*	1.046E-7	1.000	2.67E-7*	1.064E-7	1.000
Total debt (\$)	3.07E-7	2.749E-7	1.000	7.41E-7**	2.764E-7	1.000
Homeownership (Renter)						
Owner	0.336***	0.083	1.400	0.649***	0.092	1.913
<i>Bequest Motives</i>						
Attitudes toward leaving bequest	-0.017	0.021	0.983	0.061**	0.023	1.063
Number of children	0.095**	0.034	1.100	-0.044	0.037	0.957
<i>Marital status</i>						
Married(Non-married)	0.224**	0.082	1.251	0.501***	0.088	1.650
Life expectancy	0.001	0.003	1.001	-0.004	0.003	0.996
Spouse's employment status						
Employed(Unemployed)	0.341***	0.077	1.406	0.124	0.081	1.131
<i>Risk</i>						
Average risk taker	-0.040	0.079	0.961	-0.222**	0.082	0.801
No risk taker(High risk taker)	-0.370**	0.094	0.690	-0.381***	0.103	0.684
Intercept	-0.681**			-2.816***		
-2 Log Likelihood		5612.72			5056.65	
Chi-square		351.76***			594.33***	

Note. * P <.05** P <.01*** P <.001

toward leaving bequest were more likely to have cash-value life insurance than those with negative attitudes toward leaving bequest. Married households were more likely to have cash-value life insurance than non-married households, and the odds of holding cash-value life insurance for married households increased by 65%, compared with non-married households. Attitude toward risk was also an important predictor of the cash-value life insurance holding, but average risk takers and no risk takers were less likely to have cash-value life insurance.

V. Conclusions

Using 1998 SCF, The present study examined term life insurance and cash-value life insurance separately and identified the factors related to two types of life insurance holding decision. Based on the theories explaining life insurance holding, the study developed a model to predict life insurance holding of the households. The model included human capital theory, bequest motive theory, decision making under risk, and other socio-economic factors.

The results showed that the factors affecting each type of life insurance were different. For term life insurance, the variables representing households' bequest motives were found to play relatively important role while the variables reflecting human capital theory had significant impact in determining cash-value life insurance holding. Financial resource factors and risk factor were important factors for both term life insurance and cash-value life insurance. However, financial

resources factors showed different relationship with the two types of life insurance. In addition, while employment status of the household head and the spouse was significantly related to term life insurance holding, it was not significant in determining cash-value life insurance holding. This result showed that it was useful to examine the two types of life insurance separately to understand factors related to different types of life insurance.

The results regarding the household head's education level indicated relatively large magnitudes of influence on both term life insurance and cash-value life insurance, and both had a positive impact. As human capital theory proposed, this finding suggested that formulating human capital through education allowed the households to expect higher future income and accordingly, loss of income due to the household head's death would be great. Hence, the demand for life insurance increases the probability of holding term and cash-value life insurance.

In terms of bequest motives, even though attitude toward leaving bequest was significant in the model of cash-value life insurance holding, attitude and expectation variables did not have much impact on life insurance holding decision. Therefore, the results suggest that households consider their actual situations more such as number of dependents or expected financial needs and support rather than their attitudes when they make decision on life insurance.

Risk factor was found to be a significant determinant for both term and cash-value life insurance decision, but different from the expectation, no risk taker was less likely to have life insurance than high risk taker. Although the

finding did not support hypothesis, this was consistent with Burnet and Palmer's (1984) study, indicating that respondents who enjoyed taking risks had larger amounts of life insurance than no risk takers. As suggested by Burnet and Palmer (1984), holding life insurance lessened concerns about risk for those who take high risk, and not holding any life insurance gave the households a great level of anxiety about financial risk. As a result, the households did not want to take any more financial risks.

VI. Implications

From the findings, several implications can be discussed. First, the results indicated that the factors related to the two types of life insurance were different. Therefore, for life insurance industry, separate examinations of demand for specific types of life insurance would be useful for approaching different market segmentations. Also, financial advisors need to differentiate the two types of insurance when they evaluate the household's financial needs or give advice on life insurance decision. Second, the results regarding attitude toward risk suggested that financial advisors and educators should advise households without a life insurance to prepare for future financial risks such as the unexpected primary wage earner's death to alleviate their anxiety about risks. Third, the information would be useful for life insurance companies, providing a direction of marketing and designing their products. Insurance companies can emphasize the importance of human capital when explaining their products.

Also, factors related to bequest motives should be emphasized to potential clients. Finally, financial counselors may re-adjust the financial resources and needs of those who hold cash-value life insurance. For example, after examining the households' financial needs and resources, financial counselors may suggest to have a term life insurance and invest the difference instead of holding unnecessary cash-value life insurance for those who have high income and home owners.

Overall, the study results provide valuable information on life insurance to the households, financial counselors and educators, and life insurance industry as a long-term financial planning tool. However, even though the current study attempted to incorporate many relevant theories and factors to provide comprehensive understanding of life insurance holding decision, this study was unable to take into account the factors regarding the supply sides of insurance. Therefore, future research might include the supply sides of factors in the model. In addition, including the expected inflation rates would be helpful if it was available. Also, the surrogate variables reflecting the survivors' future financial needs were not able to fully taken into account in the model. In future research, including such factors will enhance the understanding of households life insurance demand and more specific types of life insurance could be examined.

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