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**The Differential Factors
Influencing Saving through
Life Insurance and
Special Focus on Interest-Rate**

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Introduction

Saving through life insurance, based on long-term characteristics of the fund, it is representing, plays at least theoretically an important role in economy. Historical trends in most industrial countries indicate that, however, compared to other financial saving, saving through life insurance has been declining over a long period¹. That fact has simulated some scholars motivation to explain these trends (e.g. J. David, Cummins (1975), Mark Warshawsky (1985), and A. Dar and C. Dodds (1989)). Various hypotheses for determinants, consequently, have been advanced in past literature, and then been analyzed qualitatively and tested quantitatively. In a broader sense, a lot of variables including interest rate, regulatory restrictions for portfolio diversification, competitiveness of alternative

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vehicle for saving, taxation, inflation and production innovation as well as existing attitudes of the personal sector towards means of finance, and others, might have more or less influence on saving through life insurance. Of various factors, to author's knowledge, either internal rate of return of saving through life insurance company or external rate of return of savings serviced by these competing financial institutions, has been commonly recognized literally or empirically by scholars at least mentioned above in those countries surveyed as a very key determinant influencing saving through life insurance.

Note that no unique, completed theory can be applied to life insurance saving, with different social-economic system across countries, inference in terms of those factors influencing the saving through life insurance in some industrial countries might not be suitable to others. Nevertheless, these implicit exposures should not hinder us with general methodology and some common factors from exploring to such certain country as China in particular. With the some recognition and understanding of previous studies on saving through life insurance, this paper thus, first of all, stresses some conceptual problems on saving through life insurance, and extremely importance of accumulating a stable and strong saving through life insurance in China in the context of general role of saving through life insurance in economy. In the following section, those factors probably influencing saving through life insurance are emphasized briefly; some previous hypotheses and tests are also outlined. This section, at the same time, indicates further the implication of previous empirical investigations to China. Additionally, some differential theories on factors influencing either saving through life insurance or demand or consumption for life insurance are also contrasted and compared. The third section of paper next

¹ see: A. Dar and C. Dodds (1989): Interest Rates, the Emergency Fund Hypothesis and Saving through Endowment Policies: Some Empirical Evidence for the U.K. *The Journal of Risk and Insurance*. P. 415.

converges focus on the impact of interest-rate or rate of return on life insurance saving, at the same time emphasizing, especially for positive and negative points to both allocation of personal assets to life insurers saving and accumulated saving through life insurance of differential interest refund regulation in China, constitutes a special part of this section. Last but not least, some conclusions and summaries encloses the end of paper.

1. Saving through Life Insurance in Financial Economy

(1). Policyholder's saving through life insurance

As far as policyholder, he or she can save with life insurance, the one of prerequisite conditions is that life insurance policy must be one of kinds of financial assets representing corresponding one of financial savings, rather than one of real savings, for example, acquisitions of consumer durable products. On the ground that the cash value life insurance policy possesses significant features of the financial savings, namely, which can bring forth policyholder either cash value as surrendering policy, payment as liability happen or benefit maturity, cash value life insurance policy as a kind of financial assets can be used by householder as a mean of financial savings. On the other hand, cash value life insurance policy as a special financial asset represent neither that kind of deposit in commercial banks in common sense, nor investment product with strong characteristics of financial saving, for instance fixed interest bearing bond. Instead, saving through life insurance always interconnects with protection element embedded. The amount of savings relative to the amount of protection depends on the

length of time for which the insurance is effective and on the number of premium payments, at some situations, the amount of saving through life insurance is also constrained by regulatory requirements, for example, in United States, the complexity of universal life insurance policies and their investment sensitive features make universal life insurance policies subject to regulation that the policy's cash value is not permitted to exceed a special percentage of the policy's face amount. The specific percentage permitted depends on the insured's age².

In that regard, whether saving through life insurance is undertaken for its own sake or merely as a by-product of the demand for protection, it is generally attributed to great extent to the premium leveling process. Differential premium level depending on the policy provisions determines the economics of scale of reserve, which in turn underlines the amount of cash value. Cash value of life insurance policy thus, in the perspective of policyholder, represents directly saving by policyholder through life insurance policy, and reserve approximates indirectly saving through life insurance, this approximation is reasonable, since cash value of life insurance policy is a non-forfeiture value that is guaranteed in essence by an adjusted reserve. In addition, reserve is due to the portion of each premium which is not consumed for life insurance protection, administrative expenses, etc. in the year in which it is paid. Current consumption of the additions to reserve has been foregone in favor of consumption for future insurance protection or retirement income. Thus, in economic sense, reserve does represent saving³. Nevertheless, saving through life insurance obtained actually by a policyholder might exceed cash value depending on various of policy options or provisions, a representative sample is

² see: Harriett E. Jones and Dani L. Long (1997): Principles of Insurance: Life, Health and Annuities. LOMA. P. 68.

³ see: J. David. Cummins (1975): An Econometric Model of the Life Insurance Sector of the U.S. Economy. D. C. Heath and Company. 1975. P. 35.

participating life policy, although no minimum amount of dividend is guaranteed in general (probable different provisions across countries), the competition has forced insurers providing some degree of dividends for participating life policyholder. Therefore, dividend, no matter that based on guarantee or not, should be considered nominally as a part of saving through life insurance except the intrinsic cash value.

(2). Life Insurers' Creation of Savings

One of important economic functions of financial intermediaries is to channel funds from surplus to deficit sectors of the economy. A surplus sector is one that desires to spend less than its current income while a deficit sector is one that desires to spend more than its current income. The financial intermediaries provide an outlet for the saving of surplus sectors and a corresponding source of loan funds for those sectors that desire to borrow. Financial intermediaries can facilitate that process by providing financial claims with characteristics favorable to savers while at the same time loaning funds on terms favorable to borrows⁴. Life insurance company is one kind of financial intermediaries in the financial service industry. Like other financial intermediaries, life insurers play also quite positive roles between surplus and deficit sectors of the economy. On the one hand, offering financial claims, usually represented by cash values as surrendering or benefit payments guaranteeing with reserves, make policyholders acquiring a kind of long-term assets. On the other hand, the long-term savings obtained by life insurers through the liability creation process are invested directly in the obligations of borrows as well as various of new assets. Since the investments acquired by life insurers would not be a

⁴ see: Paul F. Smith (1971): *Economic of Financial Institutions and Markets*. Homewood, III. Richard D. Irwin, 1971. P. 45.

practical outlet for most individual savings, savings creation promotes a large scale capital investment.

As savings through life insurers, reserves are a manifestation of the intermediate process⁵. To traditional cash value life insurance policyholders, their saving through life insurance policies are usually manifested by technical or actuarial reserves with some nominal crediting rates, cash values adjust correspondingly in the light of actuarial reserves. Policyholders savings through life insurance thus are mostly composed of nominal cash values determined by actuarial reserves. However, economics of scale of savings created and derived by life insurers are far more than that of saving manifested by actuarial reserves. The savings through life insurers embrace a broader and more important component, that is hidden reserves related but numerical different to actuarial reserves. The hidden reserves appear during the procedure used to calculate the balance sheet value of the assets and liabilities. The different between the market value of the assets and the book value is a hidden reserve, on the perspective of asset side. Additionally, the balance sheet value of the liabilities is the sum of those actuarial liabilities. The valuation rate of interest used in the calculations for discounting future liabilities is generally very conservative, in that it is considerably less than a realistic assessment of future investment earnings (after tax). This means that the balance sheet value of the liabilities is considerably greater than it would be with a more realistic assumption⁶. The difference between the balance sheet of the liabilities resulting from different valuation rate of interest is another source of hidden reserve. The hidden can sometimes be quite substantial. Therefore savings accumulated by life insurers by liabilities creation can not only render policyholders with cash value life insurance, but only contribute to economy. If saving is based on macro concern and

⁵ see: The same footnote as 3.

defined in general as the balance of disposal income minus consumption, as said as Arthur Pedor (1967), even all assets of life insurers is able to be regarded as representative of these long-term savings⁷.

(3). The Importance of Saving through Life Insurers

In a general viewpoint, increasing savings will be beneficial to economic growth. Saving through life insurers is an important factor in the long-term savings of a country, theoretically, a stable and strong saving through life insurers should also contribute to one country's economy, at least in the following points. First of all, it can to some extent counter inflation through taking money out of circulation and transfer circulatory money to long term saving. Second, life insurers can devote its predominant advantages in risk management, economics of scale in operation and information technology and so on to money and capital market, through investing accumulated saving to deficit units or borrows, and to develop in turn the resources of a country tends to fight inflation. Third, Saving through life insurers transfers to invest, which can also produce some new employment. Fourth, financial activities of successful life insurers in international financial market could devote to country's foreign exchange. Since the importance of saving through life insurers, many government have given encouragement by every means possible to develop life insurance industry, in Canada, for example, government had indicated their appreciation of this fact by giving it special consideration in the field taxation.

Saving through life insurers always accompanies liabilities creation by life insurers, the combination between saving and protection through life

⁶ see: Stephen Wynn (1975): *World Trends in Life Insurance Associated Business Programmes*. London. P96-98.

insurance policy, not only can absorb some amounts of personal incomes to long term saving, but also can pay the benefits covering losses under contract resulting from personal risks happening. In economic transition towards market orientation, putting emphasis on saving through life insurers in China has a more realistic implication. China need a great amount of constructive funds, long term funds accumulated through life insurers savings are and should become an important source of implementing national shortage of funds, for example some middle and long term productive loans. On the other hand, no cost reimbursements for personal risks in the past could be replaced in part by benefit payments by life insurance policies, these will reduce again the governmental burden, especially for pressure of national social security. Next, bank industry in China has been dominant place in the financial services during the past long time, they collect correspondingly large amount of savings relative to other financial institutions, however, financial claims provided by banks to their depositors make these funds saved by depositors being more liquid than those funds through life insurers, although banks might well play an role of some degree in capital market based on the balance funds from the time difference between deposit and loan, the function in the monetary and capital market of relative less liquid and long term characteristic of saving funds through life insurers should not be underestimated. Additionally, the public trust characteristic of saving through life insurance usually requires placing some restrictions on the investment activities of savings, that could be used as a economic leverage to some special targets, for example purchasing the treasure bills, government bonds and financial bonds an so forth in order to diminish to some extent budget deficit. Last, as mentioned previously, the transferring saving through life insurers to investment can also lead to some new business and opportunities for employment. As to this point, it reveals a beneficial circle that new employment in other

⁷ see: Arthur Pedoe(1967): Life Insurance, Annuities and Pensions. University of Toronto Press. P. 419.

industries accompanied with employment creation (e.g. agents, brokers except that staff of life insurers) of new emergency of more life insurance companies.

2. Factors Probably affecting on saving through life Insurance

(1). Some Previous Hypotheses on Factors

Although a great deal of difficult exist listing a unified factors commonly affecting saving through life insurance across countries, various factors have been identified which help to explain the relative place of saving through life insurance or insurers in a country. Among these factors probably affecting growth and level of saving through life insurers, relative return aspects, including taxation, have been shown to be important, so do the ability of life insurers to develop new products and to diversify, and the attitudes of the personal sector towards finance. A key factor underlying relative returns which has been found to be particularly important is the ability of life insurers freely to diversify the portfolio, by contrast with the relative lack of freedom of other institutions⁸. On the other hand, if the focus is on the effects these factors have on the allocation of financial assets by household to saving through life insurance policy based on the perspective of policyholder, there have probably some other factors, for example the emergency fund hypothesis besides interest rates, slightly different with those affecting saving through life insurers. Therefore, factors affecting

⁸ see: E.P. Davis (1988): Financial Market Activity of Life Insurance Company and Pension Funds. Bank for International Settlements. Monetary and Economic Department. Basle. P. 27-28.

policyholders saving through life insurance are also probably ones affecting growth and level of life insurers saving. The following however are to highlight these hypotheses affecting probably policyholders saving behavior through life insurance, namely affecting economic of scale of saving through life insurance policy in the perspective of policyholder.

-----Inflation

Generally assuming, the anticipating inflation should be negatively to insured savings if the saving reflects a desire for fixed dollar wealth accumulation. With respect to inflationary effect, J. David, Cummins (1975) argued that inflation could impact adversely on saving through life insurance, because of substitution from life insurance assets to physical assets, and to other saving media like inflation indexed pension funds, which are better hedge against inflation. Paul Johansen (1976) emphasized even if the opinion under the background of Denmark, that the steady inflation has diminished the purchasing value of the sums assured. The policyholders have felt a growing dissatisfaction, and the idea of saving to the old age through life and pension insurance has been badly hurt⁹. Thomas F. Cargill and Terrie E. Troxel (1979) also stated that whether life insurance is perceived as protection, savings, or a combination of both services, benefits afforded by the majority of the contracts guarantees are fixed in monetary terms. To the extent that anticipation price level changes lower the perceived real value of the life insurance guarantees, the demand for life insurance should be expected to decrease as fears of inflation increase, above all, he outlined two avenues, which inflation can influence the life insurance industry, are suspected to be of particular importance. The first is financial disintermediation (a process in which customs remove money from a

⁹ see: Paul Johansen (1976): Interest and Inflation. Transactions of the 20th International Congress of Actuaries in Tokyo, 25th, Oct-1st, Nov, 1976. Printed in Japan. Dai. Nippon Printing Co. Ltd. 1976. P. 133.

financial intermediary¹⁰.) during periods when past rates of inflation serve as the basis of anticipated future price increases. These anticipated price changes then are incorporated into the determination of nominal rates of interest in financial markets. Anticipated price change causes the increasing interest rates which create profitable arbitrage opportunities for individuals holding life insurance contracts bearing low interest rate policy loan provision. This profit opportunity further leads to what has been termed the policy loan crisis. The second channel is by altering the consumption pattern of the industry's products¹¹.

-----Rate of Return

Rate of return, as a factor affecting saving through life insurance, are usually broken down into internal and external rate of return. The former means rate of return made by life insurers' investment with saving through life insurance and other funds, in turn obtained by policyholders as savers through life insurance. The latter usually proxies by competing rate of return of other financial assets in a financial market. The credited rate embedded in traditional cash value life insurance policy is in general a nominal and minimum guaranteed rate (at present, variable or universal life insurance in U.S, Unit-linked life in Germany and U.K etc., for example, have changed guaranteed minimum credited rate to non-guarantee rate, and indexed to some rates of financial assets in financial markets), actual one policyholder might obtain from saving through life insurance might include some dividends and other fringe benefits, which depends on the features of life policy, for instance participating or non-participating policy. Either credited

¹⁰ see: Susan Conant. et. al. (1996): *Managing for Solvency and Profitability in Life and Health Insurance Companies*. Life Office Management Association. Inc. P. 66, 184.

¹¹see: Thomas F. Cargill and Terrie E. Troxel (1979): *Modeling Life Insurance Savings: Some Methodological Issues*. *The Journal of Risk and Insurance*. P. 392-393.

¹² see: The same footnote as 11. P. 399.

¹³ see: The same footnote as 1. P.430.

rate or dividend, more exactly rate of return earned by saving through life insurance, is determined finally by the internal rate of return of life insurers. The internal rate of return connects intensely with the asset-liability management by life insurers, with further such environment surrounding the asset-liability management as economic and financial climate. With this background, savings flows to life insurance companies are to respond positively to internal returns on life insurance savings¹², assuming all other things equal compared with other assets in a financial market. On the other hand, however, relative to rates of return among financial assets in a competitive financial market, internal rate of return of saving through life insurance respond only sluggishly to changes in market rate. The internal rate earned on cash value life contract follows market interest rates with a considerable lag, one would expect a strong adverse impact of external rate of return on saving through life insurance in light of the high interest sensitivity of saving if market rates were to increase¹³. It should be noted that there have generally opposite impacts on saving through life insurance between internal and external rates of return. Nevertheless, the two rates also probably produce some offsets. In this regard, some scholars (e.g. A. Dar and C. Dodds) have taken the offset function into consideration and indicated if both internal and alternative real rates change by equivalent amounts, there is no impact on saving through those policies, thus implying that those policies and other financial assets are, in general, one-for-one substitution¹⁴.

-----Taxation

As has been analyzed previously, rates of return might affect positively or negatively saving through life insurance. However, the intensity of their

fluctuation affecting saving through life insurance should not ignore the interlacing relations among return-rate, taxation and inflation mentioned. In other words, nominal internal and external rate of return are probably reduced by taxation, so that resulting in the real rate of return earned by policyholders as savers is not as high as expectation. Taxation usually affects life insurance savings in two ways: one is that life insurance is purchased with after-tax income, while the tax on the investment earnings is deferred until income is distributed, that is called as the deferred of tax on the inside buildup. Another is that life insurance could in effect be purchased with pretax income. No matter which ways, one key the attractiveness of life insurance products compared with other financial services products will be the relative tax treatment of life insurance and annuities in comparison with other savings products. For competitors in the financial service industry, the critical issues will be the increase in saving resulting from tax reform and the form of that savings¹⁵. In this sense, tax advantages could promote with incentive the growth of saving through life insurance. In Germany of 1980s, German life insurance companies benefit from significant tax privileges, both regarding deductibility of personal premium from income tax, and tax privilege for such premiums paid by employers on behalf of their employees. On the other hand, taxation can also diminish the attractiveness of returns earned on the asset portfolio, moreover declining the amount of saving through life insurance. The case of the United States in 1980s for example, high tax rates on interest income have serious problem for life insurers, especially during periods of inflation¹⁶. It is that point that leads to a great deal of discussion concerning radical reform of the federal tax system when time went to 1990s, in particular in 1995. The radical goal is to reduce the complexity of the current income tax and encourage savings. In

¹⁴ see: The same footnote as 1. P. 430.

¹⁵ see: Christian DesRochers (1996): Consumption Tax Proposal can Alter Future of Insurance. Best s Review. L/H. April 1996. P. 60.

¹⁶ see: The same footnote as 8. P.26-27.

the Macro economy viewpoint, Saving and tax policy are not necessarily linked¹⁷. Some individuals will be savers whatever the tax incentive, and their behavior will be unchanged. According to this, as the effective after-tax returns increase, savings could actually decrease. To sum up, advantageous taxation policy stimulates saving through life insurance, inversely, less tax privilege can diminish saving through life insurance. However, it is very difficult to confirm exactly what detail effect the taxation has on saving through life insurance across countries.

-----Other Factors

- Household (net) wealth

Saving through life insurance is subjected to household's wealth. As to how household wealth affecting on saving through life insurance, it is unable simply to say that higher household net worth is, the larger that worth will transfer to life insurance saving. In fact, these two parts of household wealth in certain period, that are usually known as the current stock of life insurance savings and disposable personal income respectively, used to be hypothesized having two opposite impacts on savings through life insurance. Current stock of life insurance savings was considered to be disadvantageous to life insurance savings, because lifetime income consumption patterns suggest that large savings levels discourage increased savings. Moreover, the higher the proportion of current savings held in life insurance, the smaller the expected new flows to this household asset category. Inversely, disposable personal income is hypothesized to have a direct relationship to life insurance savings. This relationship should be

¹⁷ see: The same footnote as 15. P.60-61.

especially true of the broader definitions of savings, which include dividend deposits and pension reserves¹⁸.

- The emergency fund hypothesis

An older hypothesis concerning one of motivations saving through life insurance by household is that saving through life insurance could be used as emergency fund through policy loans or surrenders. Policy loans, except that mentioned above as a probable result of increasing inflation or market rate, are also utilized by policyholders as an emergency fund to be drawn upon in times of personal financial crisis. Apparently, policy loans and surrender if happen would reduce the net flow of funds into the life insurance asset. That is to say the emergency fund hypothesis should be disadvantageous to saving through life insurance. Note that there is no obvious or clear-cut definition of what emergency fund should be, the effect of emergency fund on life insurance saving has been replaced by surveying unemployment related indexes, which are clearly proxy variables. One proxy used successfully by Cummins (1975) is the annual rate of growth in the level of unemployment¹⁹. Another, for example, is defined as the level of actual unemployment relative to trend unemployment²⁰.

(2). Some Implications of Factors' Analyses to China

(A). Arguing Hypotheses based on Empirical Investigations

¹⁸ see: The same footnote as 11. P. 399.

¹⁹ see: The same footnote as 3. P. 50-53.

²⁰ see: The same footnote as 1. P. 421.

From the empirical investigations perspective, the foregoing general analyses on hypotheses are not always commonly suitable to specific country, since using quantitative results to make inferences should be with caution.

----- Inflation, as general stated, could impact adversely on saving through life insurance (e.g. Cummins (1975)). However, as argued as A. Dar and C. Dodds, the effects of inflation on saving are not clear-cut, and there remains considerable uncertainty. Theoretical analysis on the optimum asset-to-wealth holding ratio, which was formulated by them as a linear function of the internal real rate of return and a single real rate of return reflecting the rate of return on other assets, indicated inflation has any impact on optimum asset-to-wealth ratio and further on saving through life insurance that are not grounded in. Furthermore, empirical evidence for U.K. investigated by A. Dar and C. Dodds (1989) does not appear to have any net impact on saving through endowment policies. Thomas F. Cargill and Terrie E. Troxel (1979), based on their empirical investigation, also found that no consistent relationship appears between anticipated price changes and the flow of savings through the life insurance sector in the country surveyed.

-----Tax privilege on life insurance premium and interest earns appear to have incentive effect on the growth and level of life insurance savings, for example Germany and Japan situations in 1980s. On the other hand, despite the fact that returns on life insurance have always been taxed and that tax relief on premium was abolished in 1984, taxation had not diminished the attractiveness of returns earned on the asset portfolio in the United Kingdom as Germany and Japan cases in 1980s²¹. Tax policy involves in various kinds of aspects, in a macro point, savings argued by some economists have not related necessarily to taxation. Even if so, differential

effects taxation have on different financial assets or financial savings will be difficult to evaluate, so that less consideration should separate taxation from return rates.

-----Little support was found by Cummins(1975) for the hypothesis that policy loan demand is directly related to the business cycle. Cummins thus suggested that the emergency fund hypothesis must be adapted or perhaps abandoned due to the complex characteristics of the present day economy. A. Dar and C. Dodds (1989) concluded empirically for U.K. evidence that emergency fund considerations were found to have no influence on savings through endowment policies. On the other hand, surrenders were found to be significantly relate to the emergency fund variable. However, since the emergency fund hypothesis is primarily a cyclical phenomenon, these findings imply that emergency fund considerations have a short-run impact on saving through endowment policies, but can not explain the observed trends relative to other forms of saving²².

-----Thomas F. Cargill and Terrie E. Troxel (1979) exhibited empirically in their paper that, normalized life insurance savings is expected negative sign with saving through life insurance, and normalized disposable income is highly correlated with personal savings and therefore is expected to correspond directly with life insurance savings.

-----In addition to household wealth having less arguments, the impacts of either internal rate of return or external rate of return on saving through life insurance, as hypotheses previous section, appear to be recognized consistently by some scholars empirically investigations as their hypotheses.

²¹ see: The same footnote as 8. P.26.

²² see: The same footnote as 1. P.430-431.

(e.g. Thomas F. Cargill and Terrie E. Troxel (1979), Mark Warshawsky (1985) and A. Dar and C. Dodds (1989)).

(B). Some Inspirations of Foregoing Discussions to China

- At present, life insurance portfolios in China are exempted from both the income-earn and the business taxation as well. To policyholders, there has also no any taxation imposed upon premiums dues, and interest earned by life policies. It appears to unable to watch temporarily how substantial impact of taxation on saving through life insurance in China. Nevertheless, tax policy for life insurance industry in China that stimulates probably growth of life insurance savings might gradually be on the agenda, coupled with the states tax reform and economic growth, in particular growth of level of disposable personal income.
- Cash value life insurance polices in China nowadays have still not had policy loan provision, although having such other policy options as policy surrender doctrine. The emergency fund hypothesis, as it used to utilized through policy loan with depressed economic environments, seems to be no effect on saving through life insurance. On the other hand, China's economic transition and states-owned enterprises reformation, unemployment phenomenon will be difficult to escape. This is a potential factor affecting life insurance saving through policy surrender or detracting new allocation to life policies purchase.
- In China, expected interest rate of cash value life polices, for example simple personal life policy, has remained at average level of 8.8 percent during the past decade. However, the average annual rate of real inflation was as high as 12 percent or so from 1985 to 1990, real inflation

between 1991 and 1995 had still a annual average rate of 12.9 percent, 17.1 percent in 1995²³. Apparently, inflation rate was higher than expected crediting rate in most years of past decade. This appears to show the inflation might have a negative impact on saving through life insurance. However, some realistic facts below appear to require more detail analysis on inflationary effect. First, Inflation has reduced to 8.4 percent in 1996, and the average annual anticipated inflation rate will be estimated to be 7.3 percent between 1996 and 2005²⁴. If expected crediting rate maintains to be unchangeable, probably dividends policy have their stage and so on, the actual effect of anticipating inflation on saving through life insurance should be careful to conclude. Second, Chinese financial market is still undeveloped one compared to economically-developed countries, householders can only acquire limited financial assets, some of which include probably great potential risk. In the process of risk-return trade-off, traditional Chinese sometimes are willing to accept security than risk. That is to say, even if some inflation exists, householder might flow to saving through life insurance, in particular no better financial asset being chosen. Next, most Chinese are low asset holders, as argued as Headen, R.S and J. F. Lee (1974), Low-asset holders consider cash value life insurance to be a direct investment, and therefore may increase life insurance life insurance purchases in times of uncertain or in the event of a forecasted recession²⁵. If this conclusion is true, the covariance between life insurance saving and expected price level changes is unclear. In a word, despite most hypotheses take it has a negative erode to fixed amount cash value life policy into account, detail effect on China's case should be tested under the Chinese specific social-economic conditions as relative data available.

²³ see: China's Statistical Bureau (1993-1996): Chinese Statistical Yearbook. 1993-1996. Chinese Statistical Press.

²⁴ see: Schweizer Rück (1998): Sigma. No. 1, 1998. P. 15.

- According to past point of view, the more the lagged saving through life insurance, the less the new asserts allocation of householders to new saving through life insurance. The proportion is based on that the majority of householders have been policyholders. In China, the majority of householders are not policyholders. Even those who have purchased some cash value life insurance policies have not in general higher protection and saving. The majority of Chinese have a traditional custom of savings, in particular being willing to deposit in banks, which has been leading to greater balance of deposits in banks during the past decades. In contrast to balance of deposits in banks, the reserves of life insurance were rather small percent of balances of deposits in banks in the same period. But, the recent facts indicate householders tend to diversify their financial assets in line with the development of financial market and the growth of disposable personal income. Therefore, without relative satiety of demand for cash value life insurance, the increased lagged saving through life insurance might still stimulate the growth of life insurance saving, either through distributing disposable personal income or transferring some share of deposits in banks to life insurance savings. In addition, as has been indicated above, the majority of Chinese have stronger propensity deposits in banks than western countries. This appears to make a consideration that the lagged deposits in banks might affect negatively on saving through life insurance. The lagged deposits in banks might be considered as a proxy of independent variable in China.
- As concluded by past both qualitative and empirical analyses, internal rate of return has a positive effect on saving through life insurance, and external rate of return has an adverse effect on saving through life

²⁵ see: Headen, R.S and J. F. Lee (1974): Life Insurance Demand and Household Portfolio Behavior. The Journal of Risk and Insurance. 1974. P. 698.

insurance. In China, the external rate of return might be proxied by rate of return of deposit in banks, or rate of return of treasure bills. One reason is that two of them have higher grade of credibility. Another is that these variables are relative suitable to realistic financial instrument chosen by householders and their custom in Chinese financial market. Since there have no policy dividend provision and accurate statistical data about internal rate of return available to policyholders, the internal rate of return appears to be able to be represented reasonably by the credited interest rate. On the other hand, in order to overcome the negative impact of inflation on life insurance, at one time in China, cash value life insurance implemented interest differential refund regulation. That means life insurers will refund the difference between expected interest rate and the interest rate of one year fixed deposits in banks, if latter is higher than the former in the same period. What rate should be employ as a proxy of the internal rate of return, credited rate or interest rate of deposit in banks, and what different consequences of interest differential refund will probably happen, will be further discussed in the third section of this paper.

(3). The Theoretical Bases for those Factors Explaining Life Insurance Saving and Demand

Till now, it appears to have no unique and integrated theories for life insurance saving and demand. A consumer's motivation of purchasing life insurance is quite complicated. She or he aims to protection and saving as a by-product, or primarily to long-term savings through life insurance, which subjects to somewhat different theories, correspondingly, some factors

affecting life insurance saving and demand should have undoubtedly respective focuses.

The earlier representative theory of demand for life insurance set forth by Menahem Yaari, who pointed out the demand for life insurance is properly considered with the context of the consumer's lifetime allocation process under uncertainty²⁶. According to this approach, the demand for life insurance should depend on present and expected future income, interest rates, insurance premium rates, and on the consumer's subjective discount functions for consumption and bequests. However, the effects of changes in the time shapes of the subjective discount function weighting are ambiguous. In addition, no hypothesis about interest rate because of its indirect effects on premium (Cummins (1975)). In recent years, though several models of the demand for life insurance have been developed and tested empirically (e.g. Babbel and Ohtsuka (1989), Lewis (1989)), nearly all theoretical work on the demand for life insurance takes Yaari (1965) as a starting point. The recent developments have indicated that, a demand function for life insurance, which derived from the maximization of the utility function of the consumer, should depend on wealth, the income stream, a vector of interest rates, a vectors of process including insurance premium rates, and the consumer's subjective discount functions for the utility functions for consumption and wealth, which are affected by the level of the financial development of the market²⁷.

Some inferences and hypotheses explaining factors of demand for life insurance in terms of Yarri (1965) stressed to great extent on the demand

²⁶ see: J. David. Cummins (1975): An Econometric Model of the Life Insurance Sector of the U.S. Economy. D. C. Heath and Company. 1975. P.27. The original paper: Menahem E. Yaari (1965): Uncertain Lifetime, Life Insurance, and the Theory of the Consumer. Review of Economic Studies 32, No.2. P.137-150.

²⁷ see: J. Francois Outreville(1996): Life Insurance Markets in Developing Countries. The Journal of Risk and Insurance. 1996, No.2. P. 263-266.

for protection, because saving through life insurance is inextricably bound to the demand for protection. In this respect, there have the same determinants for protection and saving. However, consumers are primarily motivated by the desire for long-term savings rather than for life protection. For example, the consumer may elect to supplement her or his retirement income through life insurance cash value. In this case the appropriate theory would be a portfolio selection theory. A early portfolio selection theory utilized by Nicholson in his paper title Household Asset Choice involved in a study of competition between life insurance reserves and other types of assets for the consumer's saving dollar. Nicholson found theoretically interest rates, price expectations and wealth is especially important in the portfolio allocation process²⁸. Based on the portfolio selection theory, the econometric model has been developed. For example, A. Dar and C. Dodds(1989) developed a model, which is a variant of the Modigliani(1972) model and is based on Friedman's (1977) generalization of the basic Modigliani formulation. That model described the flow of funds into an assets is made up of two parts: the first representing the allocation of the new wealth to an asset according to the optimal holding ratio, and the second reflecting a partial adjustment that involves a reallocation of existing wealth to that asset. The partial adjustment essentially implies that the allocation of existing wealth is more difficult than the allocation of new wealth²⁹. From this standpoints and background of United Kingdom, A. Dar and C. Dodds concluded that saving through endowment policies are responsive to the internal returns for British endowments and to alternative rates of return on alternative investments.

²⁸ see: The same footnote as 26. P. 30.

²⁹ see: The same footnote as 1. P.412-413.

3. The Impact of Differential Interest Refund on Life Insurance

In the second section above, the factors analyzed are concentrated on those probably affecting consumers or policyholders flow of assets to saving through life insurance, from the portfolio selection perspective. The past arguments appear to recognize, based on the both theoretical and empirical analyses, internal rate of return respond sluggishly to fluctuation in external interest rate. The fluctuation of external interest rate not only influences consumers flow of assets to saving through life insurance, but also, above all threatens life insurers asset-liability management, so that it challenges life insurers performance, at the same time, attribution of that intrinsic role of saving through life insurers to economy.

(1). The General Impact of Fluctuation in Interest-Rate on Life Insurers

Market interest rates are possibly the most important economic factor affecting an insurer's cash flows and account values related to an insurer's investment activities and its financial products. The detail impacts of interest rate on life insurer are outlined below.

- From the standpoints of liabilities of life insurer, the fluctuation in interest rate increases probably liquidity risk on liabilities. This might in turn result in a loss of stability of saving funds through life insurers. In detail, as prevailing interest rates increase, policy loans and cancellations might increase, share of group pensions might decrease, and more outflow of paid insurance benefits such as matured insurance benefits

might also happen. During the periods of falling interest rates, on the other hand, the falling interest rates might stimulate fewer policy loans, inversely, more repayments, and larger share of group pensions as well as large influx of lump-sum insurance premiums.

- From the perspective of assets of life insurer, investment activities of life insurers are restricted more or less by regulatory agency, Since the public trust feature of life insurance. Consequently, relative larger portion of assets is invested towards bonds and mortgages in most countries apart from some exceptions, e.g. United Kingdom. An insurer's investment earnings on bonds and mortgages are extremely sensitive to fluctuations in market interest rates. Therefore, the fluctuation in interest rates affects asset account, especially through their impact on bond and mortgage. As interest rates fall, the interest rates available on new loans, for bonds and mortgages for example, decrease. Borrowers from the insurer, including bond issuers and mortgagees, are likely to pay off their loans early (namely, a kind of prepayment phenomenon), the prepay might result insurer in loss of future interest income. As interest rates rise, the interest rates insurers can earn by lending also increase, the market value of outstanding bonds and mortgages decreases³⁰.
- The fluctuation in interest rates is also likely to increase flexibility of interest on liabilities, and result in destabilization of income structure³¹. First of all, since changes in the interest rates that insurers can earn on their investments influence insurers' crediting rates on their product, the fluctuation in crediting rates in turn affects more or less products attraction to customers compared to products offered by other insurers

³⁰ see: The same footnote as 10. P. 62-64.

³¹ see: Isao Tsujisaka (-----): The Impact of Fluctuation in the Interest Rate on Life Insurers. P.234-235.

or other financial institutions. However, it is almost impossible to adjust the crediting rates to pursue the fluctuation in market interest rate. Life insurers thus should take the flexibility in crediting rates for granted, along with economic environment, especially based on changes in interest rates or anticipating interest rates. In general, conservative strategy is lowering the crediting rates during the period of unstable market interest rates. Of course, the result also will rise in principle in premium rates. Second, the fluctuation in interest rates influences rates of dividends, that might lead to a shift from establishing a fixed rate of dividend to modifying rates of dividend annually, in such some countries as Japan for example in the late of 1970s and 1980s. Third, if life insurers would like to have the higher expected interest rate, life insurers are also likely to have greater feeling of burden from interest on liabilities. As a result, life insurers are forced usually to maintain interest-bearing liabilities at a relatively high level. Moreover, fluctuations in interest rates probably engender changes in exchange rates and stock prices, consequently investment income and interest on liabilities are more prone to mismatches.

(2). The Analyses on Differential Interest Refund in China

(A). The regulation of differential interest refund

During the late of 1980s, China has undergone the higher inflation. The average real rate of inflation reached about 18 percent in the last two years of 1980s. In order to eliminate the impact of inflation on life insurance, the life insurance, for example simple personal life (a line of small face amount endowment policy with saving element) in China began to carry out a

regulation of the differential interest refund in 1989. The differential interest refund means that, life insurers will pay regularly or at the expiration the balance of the difference between the expected interest rate of life policy and interest rate of deposits in banks, the detail amount refund changes according to premiums and the length of premiums payments, while the expected interest rate is the lower than interest rate of deposits in banks³². Because investment activities of Chinese life insurers are subject seriously to regulation. Most funds of life insurers have been depositing in banks, and earning an interest rate of one year and over fixed deposit. That is to say, interest rate of one year and over fixed deposit in banks in effect is representing, can be at least employed as a proxy of, a internal rate of return if it is the higher than the expected interest rate. In the latest decade, the government has been adjusting the economic activities through market interest rate, as a result the market interest rate changed frequently, interest rate of deposits in banks fluctuates correspondingly more frequent than the one in the those years before 1985. In respect to this, the interest rates of deposits in banks are reflecting indirectly to some degree market interest rate.

(B). The effect of the differential interest refund on life insurance

- The differential interest refund and inflation

In China, from 1990 to 1996, the interest rate of deposits in banks has been adjusted five times, with the changes of inflation and market interest rates. The expected interest rate almost maintains compound annual rate of 8.8 percent. The following table displays recent years when the annual nominal interest rates of one year, three, five and eight and over years fixed deposits

³² see: Chu Junhong (1997): Inflation and Exploiting Chinese Par-policy. Shanghai Insurance (Chinese Magazine). 1997. No.1. P. 30.

were adjusted, meanwhile the table also shows consumer price index of residents and expected interest rates of life policy from 1990 to 1996 as contrasts.

Table. A contrast among the expected rates, interest rates of saving deposits and consumer price index of residents

T	1990.8.21	1991.4.21	1993.5.15	1993.7.11	1996.5.1	
CPI	3.1	3.4	14.7	14.7	8.4	
I	1 Year	8.64	7.56	9.18	10.98	9.18
	3 Years	10.08	8.28	10.80	12.24	10.8
	5 Years	11.52	9.00	12.06	13.86	12.06
	8+years	13.68	10.08	14.58	17.10	
R	8.8	8.8	8.8	8.8	8.8	

Source: CPI and I derive from the Chinese Statistical Yearbook. 1993-1997.

In the Table:

T = The time when the interest rate of fixed deposits changes.

CPI= Consumer price index of residents.

I = Nominal annual interest rates of fixed deposits.

R = Annual compound expected interest rates.

From the above table, one is easy to see policyholders have a positive real return rate in the early two years even if the differential interest refund stopped due to declined inflation. With the rise of inflation in 1993, interest rates of fixed deposits adjusted upwards, and the difference between them and the expected interest rate claimed to policyholders, policyholders could reduce but not still eliminate fully the impact of inflation on real return. It should be noted that the differential interest refund as a temporary dividend method might play certain active role in reducing inflation. One empirical investigation has found that inflation had a negative but not significant effect on aggregate life insurance premium per capita (aggregate life insurance premium here including simple personal life, pension and accident insurance). The paper, however, did not find the negative correlation between inflation and simple life insurance premium per capita³³. Therefore, the implement of that regulation itself should be thoughts whether it indeed can protect policyholders from inflation. In addition, it is difficult to see the interest rate of fixed deposits can be employ as a index to reveal the relationship intimately return rate of life insurance and external economy in short terms. As a matter of fact, in China, the interest rates of fixed deposit are usually restricted by regulatory agency, sometimes they reflect policy intention other than economic activities.

- The differential interest refund and policyholders

The differential interest refund guarantees in effect policyholders who can obtain the minimum expected interest rate, no matter how changes of the interest rate of fixed deposits. Which indicates that policyholders can obtain the minimum expected interest rate as the interest rates of fixed deposits

lower than it. The expected interest rate on the average maintains annual 8.8 percent compound, it is apparently a relative high interest level, and might benefit policyholders. According to general analyses, on the other hand, external rate of return has a negative effect on saving through life insurance. That hypothesis appears not to be available to China at least in recent years. As has been said previously, majority of Chinese people has a traditional custom to deposit in banks. The banks in China have gotten great reputation since the long time. They have been becoming a leading financial channel of households and active competitors with life insurers in savings. If the interest rate of fixed deposit is regarded as external rate of return, as interest rate of fixed deposits rises and beyond the crediting rate of life policy, the policyholders can share the balance of difference between them beyond the minimum expected interest rate, and meantime have a insurance coverage. The policyholders thus might enlarge their saving through life insurance. In respect to this, time series has been used as sample and found there has indeed positive correlation between the aggregate life and simple personal life insurance and interest rates of one year fixed deposits as well, although the correlation is not significant³⁴. Since most of savings through life insurance are deposited in turn in banks, the banks appear to be willing to give up the interest privilege to policyholders via life insurers.

- The differential interest refund and life insurers

Despite the differential interest refund appears not have apparently disadvantageous to life insurance saving and demand, from the viewpoint of policyholders. Life insurers however might encounter great potential risks.

³³ see: Zhi Zhuo (1998): The Demand for Life Insurance: A Empirical Analyses for China. The Conference Paper Presented at The Second Annual Meeting of Asia-Pacific Risk and Insurance Association held in Singapore from 19, July to 22, July, 1998.

³⁴ see: The same footnote as 33.

(a). The relative high minimum crediting rate is likely to result in financial crisis in long term. The expected interest rate is estimated not to change until 2000³⁵. In terms of the prediction of the future Chinese development plan, China's market interest rate will decline to 5 percent, and average market rate of return to 5.5 percent or so in 2010³⁶. The life insurers will happen about 3 percent interest loss if not modifying the expected interest rate.

(b). While expected interest rate rise or maintains at a high level, the life insurance premiums reduce, the economic of scale of net premium reserves representing the saving through life insurance also will reduce, assuming that others being equal. On the other hand, declining life insurance premiums are likely to increase the premium burden of policyholders, which affects inversely the life insurance demand and saving. Comparatively, however, in particular for adapting to future development, life insurance in China should keep a relative low crediting rate. The reasons are that it might not make a serious economic burden of premium in line with the gradual rise of disposable income of Chinese households. Next a relative low crediting rate is also conventional strategy in many countries. It might give life insurers certain room for response to changeable circumstance. Further, a relative low crediting rate is likely to give life insurers more liquidity for performance of investment, and render dividends to policyholders.

(c). Since interest rate of fixed deposits in banks in China could not reflect fully market force because of being controlled by Central bank. The frequent changes of the interest rate of fixed deposits, therefore, probably results in being inequitable to policyholders through differential interest refund in a viewpoint of economy. Establishing a stable dividend system

³⁵ see: The same footnote as 32. P. 30.

replacing that temporary differential interest refund regulation (it is also in principle a dividend allocation) should have its way in China.

Conclusions and Summaries

In the past two decades, many scholars in the insurance field have analyzed, based on general theoretical and empirical investigations, the factors probably affecting saving through life insurance. Since different social economic system across countries, to individual country, for example in China, there should have some different factors or differential significance affecting the saving through life insurance. This perception constitutes the primary motivation of the paper in order to inference past hypotheses probable available to China. The paper is broken down three sections. Each one analyzes firstly the past theories and methodologies. However, the paper has not pursued simply the past conclusions and analyses traces, on the contrary, it combines intimately the general arguments with Chinese reality. In the first section, the paper, from policyholders and life insurers perspective, has examined policyholders saving behavior through life insurance and life insurers saving creation. The distinctions between saving through life insurance and insurers are stated. The importance of saving through life insurance is also stressed based on the standpoint of macro-economy to China, which has certain positive implication for the development of saving through life insurance in China. The second section analyzes systematically previous hypotheses on saving through life insurance,

³⁶ see: Zheng WenYu (1997): Some thoughts on Prevention of Life Insurers Risks. Shanghai Insurance (Chinese Magazine). 1997, No. 7. P.16.

in particular applying them to Chinese case, and set forth specific hypotheses on Chinese saving through life insurance. In addition, this section also compares and contrasts briefly the theoretical bases for life insurance saving and demand. The special focus in the final part is impact of differential interest refund on life insurance, including saving through life insurance. Totally, the differential interest refund regulation in China had more disadvantageous to life insurers, and suggests a stable dividend system should be established instead of differential interest refund regulation. Through above discussions, the paper also leaves some works and questions for future research. One is to carry out a detail empirical analysis to China so as to previous analyses persuasively, as long as having collective data in the future. Another is to probe further the theoretical bases of affecting life insurance saving and demand, moreover, compare and contrast common and different factors probably influencing life insurance saving and demand.

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