Investment Planning Factors and Risk Management in Personal Financial Planning

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Abstract- A number of financial institutes began the operations of personal financial planning service in Mainland China due to the economic development and the accumulation of family fortunes. However, compared with international development of personal financial planning, personal financial planning in Mainland China is still in a cradle without the conduct of influential and localized theoretic fruits. Individuals and families have no clear understanding to financial planning, and more they lack theoretic knowledge and practices of investment planning factors and risk management based on financial planning. By advanced financial planning theories and in a systematic way, this paper analyzed the three major factors of investment planning for personal financial planning: family life cycle, investment principles, and investor's risk appetite; and analyzed the five steps and the five types of approaches for risk management of investment planning, providing theoretic guide for investment planning in the financial planning of individual and families in China.

Keywords- Investment Planning; Risk Management; Personal Financial; Planning

Ⅰ. INTRODUCTION

Following economic growth and the accumulation of family fortunes, a number of financial institutes in sequence established financial planning centers for the operation of new financial planning service and facilities to occupy a part of the personal financial planning market. On Sep. 1 2004, the Financial Planning Standards Council of China (FPSCC) came to official operation. According to the outline agreement set by Cape Town Conference, FPSCC signed its membership of the Financial Planning Standards Board (FPSB) in Beijing on Aug. 23 2005. Personal financial planning, for every stage of the life cycle of individuals and families, includes the assessment on financial balance sheets for every stage, the cash flow budget and management, individual risk management and insurance planning, goals setting and realizing, education and retirement planning and revenue planning etc. Compared with international development of personal financial planning, Personal financial planning in Mainland China is still in a cradle without the conduct of influential and localized theoretic fruits. Individuals and families have no clear understanding to financial planning, and more they lack theoretic knowledge and practices of investment planning factors and risk management based on financial planning. Investment planning is the necessary approach for a family to increase the value of its assets, but expecting for high yield means enduring high risks, for "risk and yield are twins"; therefore, investment planning and its risk management is the most important part of personal financial planning. By advanced personal financial planning principles and related concepts, in a systematic way this paper analyzed the three major factors of investment planning in personal financial planning: family life cycle, investment principles, and investor's risk appetite; and analyzed the five steps and the five types of approaches for risk management of investment planning, providing theoretic guide for investment planning in the financial planning of individual and families in China.

Ⅱ. THREE MAJOR FACTORS OF INVESTMENT PLANNING IN PERSONAL FINANCIAL PLANNING

A. Factor 1: Family Life Cycle

Featuring continuity and a systematic view, personal financial planning is to plan family consumption and saving in a long period, to decide the consumption and saving of the whole life by the combination of considerations on the money accumulated before, the income at present and in the future, and all the expected payouts, work time, and retirement dates etc. It is to optimize consumption and revenue at a stable level in the whole life cycle. Modigliani delivered his Life Cycle Hypothesis in 1954, offering a theoretic foundation.

1) Life Cycle Theory. In Modigliani's opinion a rational person will plan his consumption by considering the whole life cycle, and design an optimized life-consumption mode based on the sum of his expected income in his whole life. Given volatile incomes, saving may be used to smooth the consumption path.

The budget is constrained by:

$$\sum_{t=1}^{T}\frac{c_t}{(1+r)^{t-1}}=\sum_{t=1}^{T}\frac{Y_t}{(1+r)^{t-1}} \qquad t=1,2,\cdots,T$$

To maximize the utility, consumption is the function of the income and discount of various periods:

$$c_t=\alpha c_{t-1}+\beta y_t+(1-\alpha-\beta)y_{t-1}$$

In Life Cycle Hypothesis, the inter-temporal constraint budget is critical. The hypothesis emphasizes the saving motives, considering that a consumer will arrange his income, consumption, and saving of the whole life in order to maximize utility. This hypothesis takes fortunes and incomes into the function of consumption.

The personal financial planning theory is evolving from Modigliani's Life Cycle Theory, to the general equilibrium theory of Arrow and Debreu, and to Merton's model of continuous-time finance. Individual welfare is not only determined by the fortune of his last stage, but also is determined by the commodities consumed and the leisure he

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enjoyed in his whole life cycle.

2) The Use of Life Cycle Theory. Personal financial planning makes various financial plans including investment plan during the whole life cycle of the family. The family life cycle can be divided into stages of forming, growing, mature, and aging (See Table 1). In the forming stage the family has a high-risk endurance, and in later stages high-risk investment ratio is gradually reduced while savings and reserves for retirements and medical treatment are increased gradually.

Table 1: Personal financial Planning of Different Stages of Family Life Cycle

Stage	Forming	Growing	Mature	Aging
Family Change	Marriage to birth of children	Birth of children to children finish education	Children finish education to parents retire	From retirement to death
Couple's Age	25 - 35	30 - 55	50 - 60	60 - 80
Risk Endurance	Highest	High	Weak	Weakest
Assets allocation ratio (Cash: Bond: Stock)	2:1:7	1:3:6	1:4:5	3:6:1
Trust Arrangement	Real estate	Children's education	Retirement	Heritage
Credit Use	Credit Card Consumption House Loan	Credit Card House Loan Vehicle Loan	Pay off loans	No loan or anti-mortgage
Insurance	Increase limit of life insurance	Reserve education annuity for children's education	Reserve pension by endowment insurance or deferred annuity	Buy care insurance or turn endowment insurance into immediate annuity

Data Source: The author's collection and compilation.

B. Factor 2: Investment Principles

1) Principle of Weighing Risk and Yield. To be understood in an extensive way, any investment contains risk, and the expected yield of the investment is positively proportional to the risk, generally the higher the expected yield, the higher the risk is (See Figure 1). To get high yield means to endure high risk. An investor makes rational decision by weighing the expected yield and the risk.

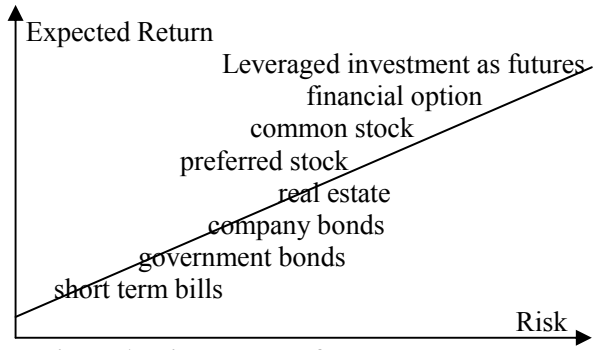

Figure 1: Risk-Return of Investment Products

2) Principle of Risk Dispersion. A portfolio is used for risk dispersion, which means "not to put eggs in one bucket", avoiding the investment of all capital in one stock or one investment product to reduce non-systematic risk. In 1952 Harry M. Makowitz issued a paper called Portfolio Selection at Money Magazine, which analyzed the investment decisions under uncertain conditions, using mean-variance model. In the model the mean represents the expected yield, the variance is the risk; they can be expressed by:

Target function: $\min \delta^2(R_p) = \sum\sum x_i x_j \operatorname{cov}(R_i, R_j)$

Constraints:

$R_p = \sum x_i R_i$

$\sum x_i = 1$ (x_i can be negative if short selling is allowed; else $x_i \geq 0$)

Of which Rp is the portfolio's yield, Ri the yield of stock i, xi and xj the ratio of stock i and stock j, $\delta^2(R_p)$ the portfolio's variance (total risk), and $\operatorname{cov}(R_i, R_j)$ is the co-variance between two stocks. By Lagrangian of the target function we can get the investment ratios under given constraints to minimize the portfolio's variance $\delta^2(R_p)$, i.e., minimizing the risks. Economically, by choice of ratios of different stocks in a portfolio we can minimize the total investment risk. Different expected yield has different minimum-variance-portfolio, and we can get a set of minimum variance. Markowitz's mean-variance theory provides a theoretic foundation for the rationality of dispersed investment.

3) Efficient Market Hypothesis. In1960s, Eugene F. Fama, financial scientist of the University of Chicago of America, delivered the famous Efficient Market Hypothesis. In a society full of information communication and information competition, any information set will quickly become the knowledge of investors in the financial investment market. Consequently, the competition in the financial product investment market will make the product price reflect this

information set in time and in full, disable investors to earn *4)* return of the market. An efficient market is defined as one in which the prices of all securities quickly and fully effect all available relevant information. Forms of efficient market are three: Weak Form, Semi-strong Form, and Strong Form. By the Efficient Market Hypothesis the financial market (including stocks, bonds, and futures) is efficient, and financial tools such as stocks can reflect relevant information. An investor can only make an investment portfolio with effectively reduced risks by admitting this hypothesis as the theoretic foundation for investment planning of personal financial planning.

C. Factor 3: Investor's Risk Appetite

Different investors have different choices on investment products and term structure; some will avoid risks by choosing low yield, and some aim at high yield by enduring high risks. Essentially the investment choice is determined by the risk appetite of individuals and families. the risk endurance of individuals and families, relating to age structure, income source, consumption habit, social security, and the elasticity of the financial planning goals etc.

1) Family's Risk Appetite Model. The risk appetite of individuals and families is characterized by risk premium based on their risk aversion degree. Curve ABC of Figure 2 shows the individual utility function with risk aversion features, manifesting in a concave line, i.e., the utility of certain fortune is bigger than the expected utility under "fair gambling" situation. Given the fortune is 1 and 3, by p we indicate proportion, on the straight line ADC: p×1+（1-p）×4=3， p×U(1)+（1-p）×U(4)= U(2), then on the curve ABC 3 corresponds to U(3)> U(2) = p×U(1)+（1-p）×U(4), represented by a B point higher than D in the figure. When the certain fortune (the cost an individual pays in "fair gambling")is 2, then the individual/family utility at the curve ABC is U(2), equaling to the expected utility p×U(1)+（1-p）×U(4), i.e., the E point in the figure. ED or 23 is the risk premium in "fair gambling". The longer ED is, the higher the risk premium is, and the higher the risk aversion of individual/family goes.

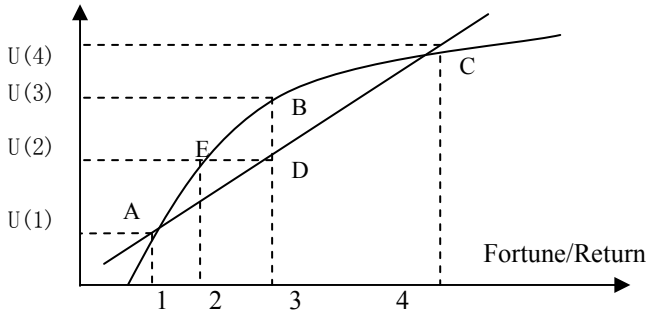

Figure 2: Risk Appetite Model

2) Analysis into Risk Appetite in Financial Planning Practice. In the practice of personal financial planning, we can use questionnaires of psychological style to test and evaluate the risk appetite of individuals and familie s. For example we can construct a virtual portfolio with different risk-yields to determine an investor's risk appetite and risk aversion degree by his 批 portfolio choice, thus to construct a rational portfolio for him, as shown in Table 2.

Table 2: Investor's Risk Appetites

Risk Aversion Degree	Investor's Risk Appetite	Risk-free Assets Ratio	Risk Assets Ratio
15-8	Conservative	70-100	0-30%
8-5	Comparatively Conservative	50-70%	30-50%
5-4.5	Medium	25-50%	50-75%
4.5-3.5	Comparatively Conservative	13-25%	75-83%
3.5-3	Aggressive	0-17%	83-100%

Data Source: Modified according to *Personal financial Planning* (Chen Gongmeng).

Ⅲ.RISK MANAGEMENT OF THE INVESTMENT PLANNING IN PERSONAL FINANCIAL PLANNING

From 1950s people began to be aware of the importance of equilibrium for they feel pressures from society, laws, economy, and technology. Enterprises, families, and individuals all have a new knowledge towards risk management.

A. Steps of Investment Risk Management

Risk Management is the managerial activity of an economic unit or an individual, by the approaches of risk identification, risk assessment, and risk evaluation, to have efficient control on risks and sound handling of losses caused by risks, aiming at maximized security by minimized cost. Generally the process of risk management can be divided into five stages:

a) Risk identification and confirmation: The first stage of risk management for the perception, analysis, and confirmation of risks.

b) Risk assessment: Assess the risk probability and potential losses by qualitative or quantitative analysis into massive historical data based on risk identification and confirmation.

c) Choice of managerial method: Choose a proper and pertinent managerial method after risk assessment.

d) Risk handling: Implement the chosen managerial method. The essential principle of this stage is to minimize the implementation cost.

e) Risk monitoring: The stage for assessing the effects of implemented risk managerial method to examine the realization or not of the risk management goals, and analyze, examine, and correct the occurred problems.

Risk management is a decision-making process of awareness, confirmation, and assessment. To judge the correctness of a decision of risk management, we should examine the sufficiency of the information available. Decisions of risk management are made under uncertain conditions, so it is reasonable for the occurrence of any result.

However, there will be only one result. We should praise or blame no decision that is made when a lot of information is unavailable. We can only judge the appropriateness of a decision that is made based on sufficient data. The criterion for judging the correctness of a risk management decision is: Given the information currently available, the decision made is the best.

B. Approaches of Investment Risk Management for Personal financial Planning

According to the attitude and approach of risk handling, risk management approaches can be divided into five types: risk avoidance, risk control, risk retention, risk diversification, and risk transfer.

1) Risk avoidance is to take direct measures to avoid risks, or to avoid doing things that may incur risks to avoid the occurrence of some kind of risks and related losses. For example one may build a house at a high place with convenient drainage to avoid the risks of flood, or to store money into banks and buy no stocks. Risk avoidance is relatively simple and thorough approach for dealing risks. But it has three limitations: Firstly sometimes risk avoidance means to give up gains; secondly to avoid a risk may incur other risks at the same time; thirdly some risks cannot be avoided.

2) Risk control is to diminish the conditions that may bring risks to reduce risk probability before the occurrence of losses, and by effective measures to minimize the losses brought by risks when losses have occurred. For example, one may install fence to guard the window to reduce the possibility of theft, or to study to improve one's ability to reduce the unemployment risk etc. Risk control is a preventative measure. One should assess the difference between the cost for risk prevention and the losses that may be brought by risks to decide whether use this approach or not.

3) Risk retention is to bear the risks and losses. It is a kind of self-insurance. Under three types of situations one may use this approach: Firstly no risk is perceived for one pays no attention to it; secondly one perceives risks but has no measure to deal with them; thirdly in one's opinion he can endure risks. Risk retention is as convenient and simple as risk avoidance. However, risk retention will have much lower effects when risks can cause high losses, or the losses cannot be predicted. In personal financial planning an advisor will advise a family to reserve emergency fund for future use.

4) Risk diversification is to diversify risks to many related items to reduce relatively the risk an item endures. In fact this is to diversify risks by a portfolio mentioned in factor 2 of investment planning. In personal financial planning many staged goals are set for the whole life cycle of individuals or families. To realize these goals one should acquire high yield by investment and enduring risks. So the choice of an investment portfolio is an important content.

5) Risk transfer is a risk management approach to transfer risks and possible losses to others. Generally there are two kinds of methods: non-insurance transfer and insurance transfer. Non-insurance transfer is to execute economic contract to transfer risks and possible losses to others, commonly seen are lease, exchange, and hedge. Insurance transfer is to execute insurance contract to transfer risks to an insurer; in particular a policyholder pays insurance premium according to the contract, transferring risks and possible loses to the insurer. Once expected and insured risks occur, the insurer will compensate the policyholder. Not all risks can be handled by risk transfer. For example no insurer will insure the risks of stock gains, let alone gambling risks which are beyond the scope of insurance.

Ⅳ. Conclusion

The current and future income and its increment of a family is the fund to guarantee the realization of goals of personal financial planning. Investment planning is a necessary approach for capital increment. So, it is very significant for personal financial planning to make clear the factors of investment planning. "Risk and yield are twins," to expect high yield means to endure high risks. Extensively risk means the uncertainty of an event. Once an event has two or more possible consequences, risks occur. "Investment" of personal financial planning has three possible consequences: gain, loss, and without gain or loss. So "investment" has uncertainty, i.e., risk. Therefore, risk management is a necessary content in the process of personal financial planning. To choose a proper managerial method for individuals and families, one should make clear "what the problem is" and save cost, then use risk handling. Risks should be re-assessed when changes occur to the life cycle of individual or family, for example marriage, birth, divorce, children become independent, retirement, loss of spouse etc. Even without the obvious changes, risks should be evaluated and modified periodically or from time to time. So risk management process is a dynamic and interacting one, wanting further study.

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References

[1] Chen Gongmeng, Zheng Ziyun, *Personal financial Plannng* [M], Beijing, Beijing University Press, 2003.

[2] (America) C. Arthur Williams et al.: *Risk Management& Insurance*, Economics Press, 2003.5.

[3] (America) G.Victor Hallman: *Personal Financial Planning*, China Finance& Economic Publishing House, 2003.8.

[4] A LIFETIME OF FINANCIAL PLANNING, By: Brown, C.M., Black Enterprise, 00064165, Oct91, Vol. 22, Issue 3.

[5] Brown, C.M.A LIFETIME OF FINANCIAL PLANNING, Black Enterprise, 00064165, Oct91, Vol. 22, Issue.

[6] James C. Van Home & John M. Wachowicz Jr., Fundamentals of Financial Management, Eleventh Edition, 2003, Tsinghua University Press.