Long-term Investment and Asset Allocation Strategies in Defined Contribution Pension Plans

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Submitted by Ke Wang, to the University of Exeter as a thesis for the degree of Doctor of Philosophy in Finance in December 2012.

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Acknowledgement

This thesis is the outcome of an amazing journey during which I have been supported by many people. I would like to acknowledge these remarkable individuals who have helped me in several ways.

Professor Ian Tonks, the supervisor of my thesis, has provided me with invaluable help and guidance. Without his consistent and illuminating instruction, this thesis would not have reached its present form. I would also like to express my appreciation to Professor Richard Harris for his valuable feedback and extensive discussions about my work.

I owe my deepest gratitude to my parents for their trust in my ability and for providing me unwavering support through all these years. Without their financial support and encouragement, I could not have afforded to study in the UK.

Finally, I would like to show my gratitude to my wife for her constant love, infinite support and encouragement from the beginning to the end of this journey.
Abstract

As the most influential factor driving investment performance, asset allocation has received a considerable amount of attention from researchers since the introduction of the mean variance framework by Markowitz; however, as far as is known, there has been little agreement on asset allocation for multi-period long-term investors. Therefore, this doctoral research investigates the performance of long-term investment over major asset classes and explores some issues in terms of asset allocation for individual retirement plan participants from an international prospective.

The first essay investigates the relative performance of stocks, long-term government bonds and treasury bills for various investment horizons across seventeen nations and considers whether or not investment risk decreases over time, i.e. whether or not the notion of time diversification is valid. It was observed that investment outcomes at short horizons were quite different from outcomes at longer horizons and investment outcomes are different with the different asset classes. The results indicate that the benefits of time diversification are apparent for stocks as evidenced by the reduction of investment risk over longer holding periods. The diminishing relative riskiness of stocks over bills/bonds with investment horizon implies that equity weights in optimal asset allocation should depend on investment horizon. Therefore, the conventional wisdom of increasing equity exposure with an increasing investment horizon is strongly supported.

Drawing on the results of the previous study, the second essay examines the asset allocation strategies of individual retirement participants and investigates the lifecycle investment strategy that is most widely used in DC pension plans. The conventional lifecycle strategies are shown to underperform the alternative buy and hold strategies. Furthermore, two dynamic lifecycle asset allocation strategies, which incorporate performance feedback, are introduced, and these are found to be responsive to past performances of stock returns or portfolios, with more superior wealth outcomes than the conventional lifecycle strategy, which is currently most commonly used.
The final study extends the previous study by using various savings rates and varying investment horizons rather than fixed numbers. In addition, since most previous research on pension investment completely ignores tax, this study examines the tax effect on retirement outcomes over various tax regimes. The results indicate that a relatively shorter savings period and a lower savings rate significantly reduce the probability of achieving the target retirement income. Additionally, investment strategies for a relatively shorter investment period are crucial for the success of retirement planning because of the huge differences in the success rates of various strategies. Moreover, countries that apply an EET tax regime have less significant reduction in success rates than those that operate an ETT or TTT tax regime. Thus, retirement participants in countries with an EET regime have more incentive to invest their savings in pension funds and countries under other tax regimes need to contribute more to achieve their target retirement wealth outcomes.
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