Acceptance Speech for the 2001 Paul A. Samuelson Award for Outstanding Scholarly Writing on Lifelong Financial Security
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Dynamic portfolio management entails two dimensions: risk and time. The interaction between risk and time has been subject to substantial research efforts from the economic community in the past century, and more specifically over the last thirty years. The central question to be solved is the following: Should younger people invest more in stocks than those who are closer to retirement? Popular treatments suggest that shorter horizons often lead to more conservative strategies. Thus, the decisions of corporate managers, judged on their quarterly earnings, are said to focus too much on safe, short-term strategies, with under investment in risky projects. Privately held firms, it is widely believed, secure substantial benefit from their ability to focus on longer-term projects. Mutual fund managers, who get graded regularly, are also alleged to focus on strategies that will assure a satisfactory short-term return, with long-term expectations sacrificed. Finally, young award-winners are advised to invest their prize in riskier assets.

The question of the interaction between risk and time originates from a famous paper by Paul Samuelson in 1963 that explained that those who have more time face more risk, *not* less risk. There is no time diversification effect: taking portfolio risk in the future raises the lifetime risk borne by the investor. In other words, taking risk tomorrow cannot serve as a diversification device for the risk borne today. Early models of optimal dynamic portfolio management, such as those first developed by Samuelson and Merton in 1969 find *no* relationship between age and risk-taking. Following Samuelson and Merton, investors should manage their portfolio in a myopic way, basically forgetting that they have a future. However, this result, which goes opposite to common wisdom, relies on several unrealistic assumptions that I reconsider in the book. In short, I want to stress the following points:

1. Investors are usually assumed to bear no other risk than their portfolio risk. In the real world, most investors bear labor risks that cannot be insured. I show that this may have important impacts on optimal dynamic portfolios. First, those with a larger labor income risk should invest less in stocks. Under some conditions, the labor risk is a substitute for the portfolio risk. Second, this effect is stronger for younger people. Indeed, labor income uncertainty is larger at younger age. This suggests younger people to be *more* conservative, not less conservative, in their portfolio decisions.

2. The optimal portfolio depends upon the objective of the investor. Consider for example two different investors, A and B. Investor A wants to save to finance his consumption specifically at the age of 65. Investor B, with the same age and the same financial wealth than investor A, has no specific plan for using her savings in the future. She wants to save in order to be able to face adverse shocks to his/her future incomes. It can be proven that investor B should invest much more aggressively in stocks than investor A. This is because investor B can disseminate the current portfolio risk into small risks on consumption over several periods, whereas agent A will have to swallow the lifetime portfolio risk in one shot at the age of 65.

3. In Merton and Samuelson, stocks returns are assumed to be independent over time, i.e., they are not predictable. This implies that investors should invest a constant share of their wealth in stocks. Recent works have shown that there is some predictability in future stock returns. In particular, the fact that stock returns revert to the mean tends to reduce the long-term risk of stocks relative to their short-term risk. This justifies long-term investors to invest more in stocks than those with a shorter time horizon, but only if risk aversion is large enough.

Understanding the underlying mechanisms that lead to these results has been, and still is, the Holy Grail of my research. I tried to show in this book that the recent advances in the economics of risk could be very helpful to provide clever advices together with their intuition for investors who are left with this very difficult question of how to improve their uncertain future. This book is not limited individual risk management. It also explores various questions related to defining public policies towards risk associated to global warming or nuclear waste for example, where risk and time are key elements. Here, we are back to the central question: how much should we, as a Society, invest for our uncertain future? I see this 2001 Paul Samuelson Award as recognition of the usefulness of this work. It is also a clear signal encouraging my colleagues and myself to pursue our research efforts in the future. And there is still much work to be done!