THE UNIVERSITY OF HONG KONG
Faculty of Business and Economics | ACRC

HK1184

SHAILENDRA KUMAR RAI

KRISHNA'S INVESTMENT PLAN

Soon after Krishna Chaitanya graduated from the Management Development Institute in Gurgaon, India, he started his first job as an analyst with a credit rating company. One day, his father suggested that it would be a good idea for him to start saving for the future. After that conversation with his father, Krishna remembered a financial plan that he prepared as part of his MBA's personal financial planning (PFP) course requirement, and he wondered if he could use it to secure his financial future.

After work one day, he carefully analyzed his old financial plan. He went through his goals and then the investment strategy. He considered himself to be a moderate investor, so he wanted to start his investments with mutual funds. But he was confused about what type of funds he should invest in, whether the level of risk matched his appetite for risk, how to allocate funds across asset classes, and how diversification added stability to a portfolio.

Knowledge and Judgment

As a moderate investor, he decided that he preferred to invest in equities through mutual funds because he was worried about market volatility. While balanced funds were less risky, Krishna knew they provided only moderate returns in the long run when compared to equities, which were riskier, yielded higher returns, and performed well over the long run.

Even though local newspapers reported that equity markets continued to grow, he remembered his PFP class professor had said that stock markets had provided negative returns in the last quarter.

Although the performance of mutual funds was easily available online through sites such as moneycontrol.com, crisil.com, and valueresearch.com, Krishna was conflicted because specialized financial media provided contradictory insights. He then remembered the advice of a guest speaker in his PFP class, Dhirendra Kumar, founder and Chief Executive Officer of Value Research, who outlined various criteria to consider in order to select a mutual fund.

Based on his knowledge and judgment, Krishna decided to short-list a few funds, keeping in mind the criteria Kumar suggested. Krishna also collected information such as quarterly net

---

Dr. Shailendra Kumar Rai, Management Development Institute, Gurgaon prepared this case for class discussion. This case is not intended to show effective or ineffective handling of decision or business processes. The authors might have disguised certain information to protect confidentiality. Cases are written in the past tense, this is not meant to imply that all practices, organizations, people, places or fact mentioned in the case no longer occur, exist or apply.

Ref. 19/636C

Last edited: 30 July 2019

asset value (NAV) to calculate risk and return, fund size, and the quality of managers in order to perform quantitative and qualitative analysis before he arrived at his final decision.

Diversification

Krishna knew that diversification lowered unsystematic risk. But too much diversification made it hard to monitor and track portfolio performances, liquidity management issues, and higher industry concentrations. And he also understood that systematic or market risk cannot be diversified away, or insured against, or even hedged.

Harry Markowitz developed modern portfolio theory in the 1950s to quantify the concept of diversification.[1] According to Markowitz's theory, portfolio risk was not simply a weighted average of individual security risk. To a certain extent, the important component that determined portfolio risk was the co-movement between the particular asset return and the returns of other constituents of the portfolio. Using Markowitz's theory reduced the overall risk of the portfolio without sacrificing the average return by properly diversifying a portfolio with assets that did not move in tandem.

William Sharpe's capital asset pricing model (CAPM) presented the concept of a market portfolio. Sharpe assumed that the return on a security could be regarded as being related to a single index like the market index. The index consisted of all securities trading on the market, and could be represented by a popular average like the S&P 500 index.[2]

Under the CAPM, attention shifted from variance between numerous securities in the market to beta, which measures nondiversifiable risk. One key element of the CAPM was that the market portfolio was the optimum portfolio. However, the portfolio consisted of hundreds of securities, which make it virtually impossible (except through an indexed fund) for anyone to invest in it.[3] This difficulty must be viewed against the fact that diversification reduced diversifiable risk, and only a fully diversified market portfolio succeeded in completely eliminating this risk.

After he explored these theories, Krishna wondered what was the minimum number of securities he needed to eliminate most diversifiable risk.

He knew mutual funds were diversified, as most equity funds held anywhere from several dozen to a few hundred stocks. However, that created another problem for him, since individual funds often concentrated on a narrow slice of the market, i.e., technology companies, small-cap, or large-cap issues. This left investors more vulnerable to price, based on the number of stocks these funds owned.

Krishna wondered how many mutual funds he needed to carry within a given investment class. He questioned how many growth, balanced, or internal funds were needed before the benefits of diversification diminished, and also, how many were too much?

With these theories in mind, Krishna visited his friend, an investment banker, who suggested he needed to also consider global diversification, as more than 75% of the world's stock market values were outside India.

---

[1] C. P. Jones, *Investments: Analysis and Management*, 12th ed. (New York: John Wiley & Sons, 2012), pp. 181–182.
[2] W. F. Sharpe, G. J. Alexander, and J. V. Bailey, *Investments*, 6th ed. (New York: Prentice-Hall, 1999), pp. 227–230.
[3] S. Mittra, S. K. Rai, P. Sahu, and H. Starn Jr., *Financial Planning: Theory and Practice*, 1st ed. (New Delhi: Sage Publications India, 2015), p. 261.

His friend pointed out that investment in foreign markets reduced systematic risk if overseas markets were not correlated with Indian markets. Since markets did not move in lockstep, blending international stocks with domestic issues added stability to a portfolio.

Finally, Krishna needed to take into account the concept of an efficient portfolio, defined as one that has the smallest portfolio risk for a given level of expected return or the larger expected return for a given level of risk.[4]

Krishna knew investors were assumed to be risk averse. Thus, the optimal portfolio of a risk-averse investor was one of the efficient frontiers that were tangent to an investor's indifference curve that was highest in the return-risk space. This maximized an investor's utility because the indifference curves reflected their preferences, while the efficient set represented portfolio possibilities. In selecting a portfolio from the efficient frontier, investors' preferences (as can be seen by indifference curves) with their portfolio (as can be seen by the efficient frontier) were matched.

The twin concepts of diversification and an efficient frontier led to the establishment of the asset allocation model (AAM) as the main foundation for a diversified portfolio. But in his calculations to find the optimum portfolio, based on the highest Sharpe ratio for an indifference curve, Krishna faced two further issues.

Portfolio Optimization

First, the Markowitz optimum portfolio (constructed on the premise of maximizing the Sharpe ratio of portfolio) was the portfolio with highest risk and returns compared to its peers.

This effect was partly due to a bull market, where, with an x% rise in risk, there was more than an x% rise in returns. After this calculation, Krishna was confused about whether he needed to select this high-return and high-risk portfolio composition or take an alternative approach.

He was also skeptical about the use of standard deviation as a measure of risk because standard deviation punished both the positive and negative fluctuations of returns, but in reality, positive fluctuation of returns benefited the portfolio.

Asset Allocation and Alternatives

The AAM allowed Krishna to diversify his portfolio and reduced risk. Asset allocation was derived from modern portfolio theory and the concept of the efficient frontier. It was also derived from the use of powerful simulations that allowed investors to quantify risk in general ways. However, it also involved qualitative factors and judgment.

Based on these theories, Krishna decided to invest the major portion of his investment in mutual funds within a diverse basket of funds. This included mid-cap, balanced, diversified money market, and debt funds.

When he created his investment plan, Krishna noticed that gold was close to a four-year high. The prospect that it could rise further due to domestic and global factors forced him to also consider gold as an asset class for his portfolio.

[4] Jones, *Investments: Analysis and Management*, pp. 201–215.

For retail investors, alternative investments usually included real estate, private equity funds, venture capital, commodities, and hedge funds. During his MBA studies, Krishna heard about private equity and venture capital funds, but he was not sure of their availability or their risk and return characteristics.

He knew that he could use alternative products to further diversify his portfolio because of their low correlation to his planned holdings. However, Krishna decided not to consider these investments because of his risk profile and almost zero asset base. But he decided that at a later stage of his life, he would reconsider this decision, if it matched his risk and return prerequisites.

Finally, Krishna decided his retirement funding would be from provident funds and a partial liquidation of his investments.