



Risk Management Breakdown at AXA Rosenberg: The Curious Case of a Quant Manager Trusted Too Much

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INTRODUCTION

The need for corporate governance systems is driven by problems that can occur when there is a separation between the owners of a company and the managers of the company. Because managers are agents (and not sole owners themselves), they do not always have incentive to act in the best interest of shareholders. Instead, they can take actions to improve their own situation, even when there is a cost to those actions that is borne by shareholders. To rectify this problem (known as the “agency problem”), organizations adopt incentive and control systems that better align the interests of managers and owners and improve the ability of shareholders to monitor executive behavior.

Each company faces challenges in designing a governance system that works best for its particular situation and structure. In the case of public companies, shareholders must overcome the challenges of diffuse ownership (which makes monitoring difficult) and the need to work through a board of directors. In the case of companies with dual class shares, shareholders must overcome the challenge of having inferior voting rights relative to insiders. Even in the case of privately held companies, owners sometimes struggle with issues of separation and control. The challenges can be particularly acute when a company founder has considerable influence over the organization and its culture, and third-party investors have been brought in to share ownership. In order to be successful, the governance system must balance *deference* to the expertise and knowledge of the founder with objective *oversight* that allows the board of directors to intervene with the founder’s decisions when necessary. Lacking this balance, a company’s governance system can

invite problems that significantly increase the possibility of organizational failure.

GOVERNANCE AT AXA ROSENBERG

Rosenberg Institutional Equity Management was a private investment management firm founded by Barr Rosenberg in 1985. Barr, a former finance professor at the University of California at Berkeley, is widely renowned for his pioneering work on risk factors that influence stock value that is still in use today in portfolio risk assessment and performance attribution. Through his firm, Barr employed a quantitative strategy based on fundamental analysis to identify and rank companies that were undervalued relative to peers. He set an ambitious target of achieving 2 to 4 percent alpha (or outperformance) relative to benchmarks, and for the most part was successful in meeting this goal over a 15 year period. With his track record, Rosenberg attracted investors in the U.S., Europe, and Asia and by the late 1990s managed \$10 billion in assets.

In 1999, French insurance company AXA, looking to diversify and expand its investment management business, acquired a stake in Barr’s investment firm. Under the agreement, AXA purchased a 50 percent ownership position and received an option to buy an additional 25 percent. Barr remained a significant investor and chairman of the firm, which was renamed AXA Rosenberg. Under their agreement, AXA had the right to appoint 50 percent of the board of directors, with Barr appointing the remaining 50 percent.¹ Of note, this structure was to remain in place *in perpetuity*, meaning that AXA’s board representation would not change even when AXA exercised its option to increase its ownership position to 75 percent.

Despite his prominent position as founder and chairman, Barr did not retain formal leadership of management activities. AXA Rosenberg was led by a group CEO who was appointed by AXA. This individual ran the executive committee that oversaw day-to-day operations, including portfolio development, executing and settling trades, client relations, marketing, human relations, and legal and regulatory compliance work. Although Barr was the *de facto* head of the research center (where the quantitative trading models were coded and executed), he ceded the formal title of director to Tom Mead, who represented the center's activities on the executive committee.² As a result, Barr had no formal management title and no formal management responsibilities, despite exerting considerable influence over the firm.

Although unusual by the standards of a public corporation, there is some precedent for this type of governance structure in the asset management industry. Strategic buyers (such as financial and insurance companies) often have difficulty retaining and motivating investor talent after signing joint venture agreements with boutique investment firms. To preserve the environments that allowed these firms to be successful in the first place, they are willing to afford considerable autonomy to the founding investors. A typical arrangement is for the strategic buyer to assume responsibility for the support functions of the firm while giving the original investment team full discretion to make investment decisions without interference, although the seller must typically abide by a code of ethics and submit to periodic review by internal compliance officers.

In the case of AXA Rosenberg, however, the degree of autonomy was extreme. Barr not only oversaw all activities in the research center, but AXA was given little visibility into the details of the research process. Barr did not report to the group CEO, and the management team of AXA Rosenberg did not audit the models that the research team developed. The group CEO had no authority to hire or fire personnel in the research center, and did not always interview candidates who applied to work there. Furthermore, although Barr retained the title of chairman, he routinely delegated the facilitation of board meetings to fellow board members that

he had appointed. Barr attended the meetings, but often by telephone rather than in person. Finally, even though Barr was not majority owner and was only one member of the board, he had effective control over many organizational decisions. If Barr opposed a change favored by others—for example, a decision to adjust the profit-sharing program—it was typical that the board and the executive committee would defer to his position. Barr also sat on a specially created governing board that acted as a “tie-breaker” if the AXA Rosenberg board deadlocked on any issue.³

Following the joint venture agreement, the assets under management at AXA Rosenberg increased significantly. In 2002, they doubled from \$10 billion to \$20 billion, owing largely to an infusion of cash from AXA and the clients of its wealth management division. By 2005, assets exceeded \$69 billion and by 2007 reached \$135 billion. The investors in AXA Rosenberg were primarily institutional investors, pension funds (both foreign and domestic), sovereign wealth funds, and retail investors. Also during this time, AXA exercised its option and increased its ownership position to 75 percent.

GOVERNANCE BREAKDOWN

The governance breakdown that led to the unraveling of AXA Rosenberg had its roots in a technology migration project spearheaded by Barr and managed by research director Tom Mead. In the mid-1990s, Barr decided to transition the code underlying the research center's models from its original programming language of FORTRAN to an object-oriented language called Eiffel. The migration, which was intended to take no more than a few years, ended up stretching out over a decade and effectively became a continuous work in process. Part of the problem was the way the project was managed; rather than upgrade the model in its totality all at once, the model was upgraded piecemeal. As the research center was constantly rewriting code to optimize its investment strategy and to keep up with rapid growth and new product development, the migration was unable to keep pace with the continuous revisions. Another problem was due to the choice of programming language. While Eiffel

is considered a high-quality language, it is also very obscure. The PhDs hired into the research center were often not experienced working with it and required a steep learning curve, and the AXA audit teams could not effectively audit the technology transfer. Finally, because Barr closely guarded access to the model, a small set of programmers had to balance model reprogramming with model optimization. As a result, the system migration was long and expensive.

The board of AXA Rosenberg was frustrated with the pace of progress. They were particularly concerned that the intellectual talent in the research center was spending too much time on reprogramming and not enough on innovation and understanding market dynamics. The CEO arranged for a successful technology leader to be seconded to the research center to support the project management of the migration to Eiffel; however, he and the board were unable to enforce accountability for meeting deadlines and completing the migration.

In 2007, the board agreed that the research models be adjusted to assume more market risk. This was done in response to client requests to assume more risk and improve returns, which had been lackluster in the low volatility market following the bursting of the technology bubble. Unbeknownst to the board, as the changes to the risk model were implemented, an error was introduced. A programmer incorrectly programmed the risk model so that some of its calculated risk elements were too small by a factor of *ten thousand*. As a result, the model sometimes grossly undercalculated the riskiness of the firm's investment decisions. Even though the research center had quality control measures in place to check the code revisions, these measures did not detect the error because the model was producing higher risk on a simulated basis as the board expected. The error remained in the code for two years before it was detected.

Starting in 2007 and through 2008, the volatility of the market increased. Most funds that traded on a quantitative basis performed poorly during this time. AXA Rosenberg, however, experienced a considerable deterioration in performance relative to other active quantitative managers. Many of AXA Rosenberg's funds slipped into the fourth and

fifth quintiles.

In June 2009, a programmer identified the error in the course of updating the risk model. He notified his boss, Tom Mead, who in turn informed Barr. The chief investment officer, who was responsible for implementing a portfolio strategy based on the model's outputs, was also notified. However, Barr made the decision not to inform the group CEO, the head of compliance, or the board of directors. Instead, he proposed that his team wait and correct the error during the next round of code updates that were scheduled to take place a few months later. Known to him or not, this decision was in clear violation of SEC regulations which require that an investment company notify clients if its policies differ materially from those disclosed in its marketing materials.⁴

Although the error was corrected in September 2009, the CEO was not notified that the error had existed until November 2009. Shortly thereafter, the board launched an internal investigation to evaluate the matter. Barr and Tom Mead were recused from this process. In March, the company informed the SEC of the error, and the SEC launched a separate investigation. When clients were informed of the error and the SEC investigation in April, many demanded the return of their capital. By the time the investigations were complete nine months later, assets under management had declined to \$20 billion.

AXA Rosenberg hired Cornerstone Research to calculate the economic cost of the error. Cornerstone determined that the coding error had affected 600 client portfolios and caused \$217 million in losses (approximately 22 basis points on average) over the two years it was in place. Of note, it found that 57 percent of client portfolios either had not been affected or had benefited from the increased risk taking caused by the error.⁵

In June 2010, AXA agreed to purchase the remaining 25 percent of AXA Rosenberg that it did not own. AXA Rosenberg became a wholly owned subsidiary of AXA Investment Managers. It continues to exist today and continues to rely on the same quantitative investment models originally developed by Barr. However, its product focus has shifted to lower risk investment strategies with

lower targeted alphas.

In July 2010, both Barr Rosenberg and Tom Mead resigned from the company. In February 2011, AXA Rosenberg settled charges of misleading investors with the SEC and agreed to pay over \$240 million, including \$217 million to reimburse clients for investment losses and \$25 million in penalties. In a press release, SEC Director Robert Khuzami criticized AXA Rosenberg for an organizational structure that did not allow the company's executive committee to have clear insight into the operating activities of the research center:

To protect trade secrets, quantitative investment managers often isolate their complex computer models from the firm's compliance and risk management functions and leave oversight to a few sophisticated programmers. The secretive structure and lack of oversight of quantitative investment models, as this case demonstrates, cannot be used to conceal errors and betray investors.⁶

In September 2011, the SEC charged Barr Rosenberg with securities fraud for failing to disclose a significant error in the company's investment model. Barr agreed to pay \$2.5 million in penalties. As part of the settlement, Barr was banned from the securities industry for life.⁷

WHY THIS MATTERS

1. Risk management is a fundamental fiduciary duty of the board of directors (including the subsidiary board of AXA Rosenberg). How does a board satisfy itself that risks are known and appropriately monitored within an organization?
2. The case of AXA Rosenberg involves a widely renowned investor with extremely specialized financial knowledge. Is it really possible for a board to monitor such an executive and engage in rigorous risk management?
3. Barr Rosenberg's relation with the board and the executive committee of AXA Rosenberg was guarded, and he was not particularly forthcoming with information. How does an executive's personality affect the implementation of risk management by the board?
4. The joint venture agreement between AXA and Rosenberg involved several curious features.

Could the deal structure have been modified to mitigate the economic impact on AXA shareholders? If so, how? Would this have improved the outcomes for all parties? ■

¹ The board was a subsidiary board, responsible for compliance with the firm's obligations under the Investment Company Act of 1940. The mutual funds managed by AXA Rosenberg were overseen by a separate board of trustees comprised of independent directors.

² Portfolio development activities were separate and distinct from the activities of the research center. The research center calculated and ranked the relative value of potential stock investments. These were then conveyed to the chief investment officer whose team created a portfolio that was diversified in terms of industry, size, geography, etc. From an organizational perspective, the chief investment officer was not a member of the research center. Both the chief investment officer and the director of research were members of the executive committee and the board of directors.

³ In the Matter of Barr M. Rosenberg, administrative proceeding number 3-14559, in the U.S. Securities and Exchange Commission.

⁴ SEC, Securities Act of 1933; Investment Advisors Act of 1940.

⁵ During the period in question, AXA Rosenberg managed an average of \$100 billion in assets.

⁶ SEC, "SEC Charges AXA Rosenberg Entities for Concealing Error in Quantitative Investment Model," (Feb. 3, 2011).

⁷ SEC, "SEC Charges Quant Manager with Fraud," (Sep. 22, 2011).

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