

Risk Management and New Financial Products

DR. MD ARIF HUSSAIN

(M.Com, Ph.D)

T.M. BHAGALPUR UNIVERSITY

BHAGALPUR (BIHAR)

Introduction

New Products play a central role in the ongoing success of a financial services firm, Financial innovation and new product offerings have introduced both new revenue and profit opportunities as well as new risks, some of these risk have historically attended the normal operations of business, but entirely new risks or levels of risk have also arisen. Developing new products and managing the associated risks have become central management functions at investment banks and other financial institutions.

This chapter addresses the importance of financial innovation, some of the important drivers and examples of new financial products, the risk associated with new financial products, and the practices financial services firms can use to address them. Among these risk, market or trading risk, credit risk, liquidity risk and intangible risk are examined individually. The discussion is practical rather than theoretical, based largely on current experience in the financial services industry.

The Importance of Financial Innovation

The greatest risk associated with financial innovation is that of failing to innovate. Stephen Friedman, senior partner of Goldman Sachs, has observed that great enterprises are often created by the conception and execution of "big ideas" Frequently corporations and firms rely on past innovations for sustained periods without generating the next important driver of growth. The financial press is replete with examples of major companies whose failure to produce a continuing stream of "big ideas" eroded their leadership and even threatened their survival.

Financial services firms are frequently more susceptible to this danger than industrial corporations whose products and services may have longer lives. A firm does not have to be first in the market with new financial products, but it may need to be a "fast second" to avoid being shut out of market. Pioneering products can often be improved, thereby reducing the risk of the second wave of new products. The reality is nonetheless clear: innovation is critical to survival.

The necessity of innovation is inherent in any financial services firm seeking to offer solutions to changing client demands. New products, have recently addressed such fundamental needs as investors, requirements for (1) yield in a low-interest-rate environment, (2) stability amid volatile interest rates and currency values, and (3) cross-border financial products and services in the midst of globalization of market opportunities.

These changes are so basic that an inability to address them adversely affects relationship between financial services firms and their client.

Given the importance of access to innovative ideas, clients usually distinguish between new and conventional products or services. While rewarding relationship bankers with conventional products or services. While rewarding relationship bankers with conventional transactions, issuers and investors frequently pursue innovative ideas with their originators. New relationship can sometimes be formed only by offering new products and services which clients

need and which they feel justified in pursuing outside existing relationships. The financial return on these products is minimized if the initial transaction leads to follow-on business and a permanent relationship. An example of this benefit of product innovation at Goldman, Sachs is Monthly Income Preferred Stock (MIPS). MIPS is a new security which receives equity treatment from the rating agencies while affording the issuer tax-deductible dividend payments, thereby fusing two of the primary advantages of equity and debt into a single instrument. MIPS has provided a mechanism to achieve an increased presence in the perpetual preferred market as well as a number of new client relationships.

Product Innovation- Drivers Examples

The introduction of new financial products and services by financial services firms has accelerated in recent years. Driven by competitive pressures and the need to develop new, higher-margin business, financial services firms have devoted substantial resources to new product generation. As is increasingly the case in many industrial and manufacturing companies, new products now account for significant revenues. In addition, the higher value-added associated with many new products frequently affords higher fees and therefore result in disproportionate contributions to profits.

The growth of financial derivative products demonstrates the importance of new products. Derivative products in the investment banking agency and proprietary trading business in the late 1980s and early 1990s replaced the merger and acquisition and leveraged buyout boom that fueled precious growth and profitability.

New Product innovation has historically been driven by changes in tax laws, accountings and other regulatory considerations as well as by fundamental economic and capital market conditions. Today advances in telecommunications and information technology also drive innovation. The ability to perform large number of calculations in real time allows for customization to a degree not previously possible. Another drive of innovation has been the increasingly complex needs of companies as they have widened their global reach. Improved global networking and information sharing have enhanced collaborative innovations and extended the new product vista into many currency related areas and cross border transaction. Improved computer technology and increased comfort with financial modeling and data analysis techniques also help manage the associated with these new products.

Many recently developed financial products are themselves producing further innovation new products. A financial services firm incurs a variety of risks when introducing new products. The feasibility of new products relates to a firm's ability to hedge the risk of the new activity. Many of the recent derivative product innovations have provided mechanisms which firms can use themselves to hedge their trading in futures, options or swaps, In addition new products that provide liquidity in individual investments or for firms as a sovereign allow further innovation and risk assumptions.

New products in a financial services firm take variety of forms include a wide range of issuer and investor constituencies and markets. New products may be directed to investing clients; trading partners; corporate municipal or sovereign issuers; or a combination of these parties.

New products offered to issuers may also give the financial services firm an opportunity to take the other side of transaction. An issuer may desire to manage risk or extract value from a

financial position due to the nature of his underlying business or outlook. Financial firms trade directly with an issuer and thus remove the market risk of the issuer's exposure to the investment position. For example a corporation may sell equity put or call options to a financial services firm can reduce market risk by using own books. The financial services firm which retains the option on its dynamic hedging techniques while trading the company's underlying common stock. Through this approach, the financial services firm can establish a neutral position with regard to the direction of movement of the company's stock. In addition to managing risk, this practices avoids placing the interest of the financial services firm and its client in opposition.

New Products may also encompass new services as well as new financial instrument. At the inception of the leveraged buyout and raid mania of the early 1980s Goldman, Sachs begin offering an anti-raid service which defended corporations from hostile overtures, it was an effective was a service rather than a financial instrument, it was an activity new product which developed a business and met client needs. While new services typically involve less direct financial risk, they do entail other types of risk, which are discussed below.

Risk management

New products and services generate both tangible and intangible risk. At most financial services firms risk management is a top priority and demands attention at the highest level.

Risk management dose not mean risk avoidance. In many cases, senior managers encourage operating units to assume greater market or trading risk when the risk/reward ratios are favorable. Risk is associated with profit. A financial services firm should not avoid all risk, rather, it should identify and quantify risks correctly and prepare accordingly.

In addressing overall risk, a financial services firm may analyze a number of different types of risk, including market or trading risk, credit risk liquidity risk, and other forms of intangible risk. The latter category encompasses a broad range of risks ranging from legal, compliance and control issues to the protection and enhancement of public image and reputation.

These risks must be considered at the level of individual financial positions as well as that of the entire firm. Individual risks must be analyzed as part of overall exposures to given credits or markets. In large institutions with many different trading areas, monitoring cumulative exposures is a significant challenge. An overall exposure may result form completely unrelated instruments or positing assumed by various operating units. Recognizing the correlations and instituting appropriate reporting techniques require content attention and systemic controls.

Much attention is now focused on identifying correlations between assets or liabilities that do not directly offset each other. Determining these relationships, Programming them into a risk management system and monitoring their validity requires substantial effort. A model may involve thousands of different assets and liabilities. Reporting systems which provide more sophisticated information on a firm's risk their investment by providing substantial competitive advantage.

One of the most sophisticated management tools utilized and Goldman, Sachs originated form the Global Asset Allocation Model development by Fischer Black and Bob Litterman. This model was originally employed for our investing clients and was later adapted to our own risk management purpose. The model is used to suggest optima asset allocation and to measure risk for a portfolio containing many different asset types denominated in different currencies: including equalities, fixed- income securities, commodities and derivatives such as awaps.

Central to the model is a covariance matrix of correlations among volatilities of different asset classes.

The Black-Litterman framework offers significant advantages over earlier asset allocation models. Because it was designed for many asset classes and currencies, the model is better suited for global asset allocation than earlier models which focused on only a few assets classes or a single currency. The model also uses daily return data instead of the monthly data in most other asset allocation models, and therefore it provides a more timely measure of market risk. Another innovative feature of the model is its ability to recommend “best next trades.” This features prioritizes the trades a client might execute to reach optimal portfolio allocation. Another of the outputs of the model is “risk landscape” within a specific portfolio’s country and product matrix. An example of such a risk landscape is shown in Figure.I

To Control trading-related risks, all trades report to senior professional in the trading area. In addition, many trading risks and positions are reviewed individually and globally by managers outside the trading function. Finally, to ensure that senior management has the clearest possible view of risk position at Goldman, Sachs, risk control functions generally report directly to the Management Committee. This Provides top-level information flow and unifies the risk management function.

Market Risk

Market or trading risk involves both directional risk and volatility risk. Directional risk refers to the risk of adverse, movements in the price of equity or fixed-income securities, foreign exchange or other assets. A financial institution risks loss (1) when prices decline and it has long positions due to agency-related or principal trading or (2) when prices rise and the institution has short positions. Volatility risk relates to the difference between actual and expected volatility in asset prices. Such a divergence results in gains or losses depending on the agree of underestimation or overestimation of volatility.

Historical market movement models used in other trading areas measure past price changes for several standard deviations and apply those changes to the current portfolio. The probability of various gains or losses based on price movements can then be determined. Risk of loss is calculated daily by risk control manages as well as the individual trading areas. This calculation incorporates all products.

As mentioned above, trading groups may utilize several approaches to evaluate risks and rewards associated with new products or with particular transactions. One approach evaluates risks algebraically; it seeks formal solutions based on expected cash flows. A second approach involves scenario analysis, which evaluates costs returns under a variety of market outcomes. These outcomes can be analyzed individually or together to yield an average expected outcome. Finally, Monte Carlo simulation techniques provide a more rigorous approach. This simulations are particularly effective in analyzing the risks associated with derivatives.

For example, a financial services firm may wish to evaluate two different strategies for accumulating a particular stock either as a principal or an agent for a client. One Strategy involves purchasing stock at regular intervals until the desired amount has been bought. The other strategy involves purchasing stock at regular intervals and selling puts on it to a third party, giving that party the right to sell additional stock to the financial services firm at a predefined price. Monte Carlo simulation techniques generate a probability, such as that in Figure I Which

represents the range of out each strategy.

Figure I

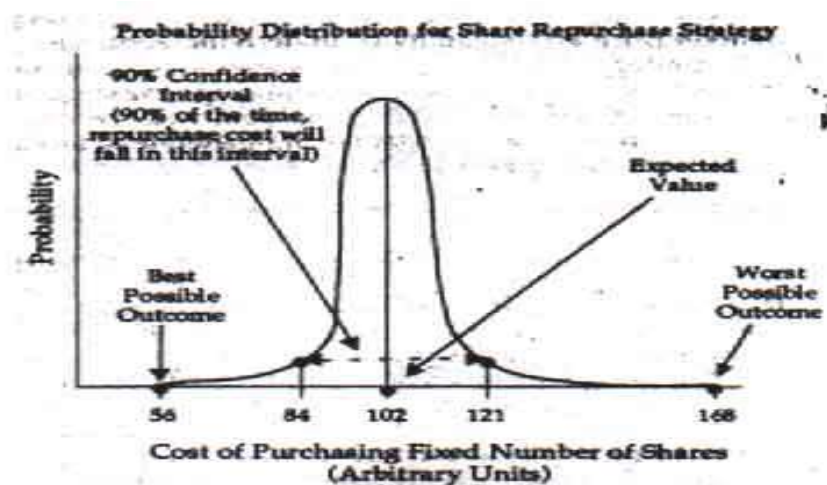


Figure VIII: the most lik dividend rat illustrates th curve can be

illustrates the range of possible costs, which will result 90% of the time. Geometrically, 90% of the area under the curve falls above the horizontal line, corresponding to the 90% confidence interval; and 10% of the area falls below this line. The curve for this strategy can then be compared to others to assess the relative risks and rewards. In this example, using puts in connection with a share accumulation may yield a lower expected overall cost, more attractive confidence intervals, superior best-and worst-case outcomes, or a combination of these advantages.

Because computer-based Monte Carlo simulations can effectively assess a large number of trading strategies and their risks, they are used in modeling many new financial products. Monte Carlo simulation follow a three-part process: defining a valuing tool, determining a strategy, and testing the strategy to generate a probability distribution similar to the one shown. In the first step, a value function is defined based on inputs such as the market price and volatility of underlying securities. In the second step, the strategy is selected. The final step involves running a computer program which repeatedly applies the strategy to a large number of random walks over many periods. Each random walk provides on value data point, and the sum of these data points generations a probability distribution such as that in Figure- VIII-II

Credit Risk

Credit risk related to the possibility that a debtor defaults on its loan or is unable to repay

its obligation in a timely manner. Some financial institutions consider the assumption of credit risk as a primary business, but many investment banks and trading firms do not. Even if a firm regards its primary business as assuming market risk, increasingly complex transactions and direct customer interactions have made credit risk increasingly necessary. The explosive growth of the swap and other derivative markets has contributed significantly to this trend.

At most financial services firms, a credit department evaluate the clients and counter parties to whom the firm will have risk exposure. Typically these groups rely on classic business analysis techniques. Given the enormous number of corporations and institutions involved in worldwide investment banking activities and trading market, credit departments also rely heavily on public rating service such as Moody's Investor Services and Standard & Poors Corporation.

At Goldman, Sachs, the Credit Department established limits independent of producing areas based on both public and internal credit analyses. It assures that credit exposure complies with the Firm's credit limits. A global computer network reports credit exposure by product, counterparty and country for all trading and hedging activities. Underwriting and other substantial commitments must be approved by the Firm's Commitments Committee and the Management Committee.

Scenario modeling techniques analyze the degree of credit risk created by these currency and interest rate swap transactions. By applying historical default rates for the various rating categories, using the default rates implicit in rate spreads, and projecting certain" depression scenarios" potential losses due to credit exposures can be estimated.

Since many new products involve mutual commitment and exposures between financial services firms and their clients, most mark-to-market commitment or event triggers are symmetric; apply to both parties. However, these provisions are not universally applied when parties have a significant display in creditworthiness.

Liquidity Risk

Liquidity risk involves the ability to meet financial obligations, both globally and in the context of particular transactions. At the global level, financial services firms follow a number of policies relating to both asset management and funding to maintain liquidity during prolonged periods of stress. The involves carefully building upon the firm's equity base and sometimes using-rather than short-term debt. With few buyers for these loans there was little opportunity to hedge the exposures. On the other hand equity derivative options executed in liquid stocks can be hedged using the underlying liquidity in the stock market. As a result, there is no real need to capture liquidity in the option itself.

As noted above, one example of a new financial product with liquidity risk ramifications involves equity put and call warrants. Such warrants can be bought or sold by an issuer with a financial services firm acting as counterparty. This arrangement gives the owner of the warrant the right to buy or sell shares of the stock at a predetermined price over some period.

Other Risks

Many other risks are associated with the creation of new financial products. These risks begin with the opportunity costs of pursuing uncertain development activities. They also include the risk of depending on too few new products, reputational risks associated with the perception of the new products, future responsibility risks of product does not produce desirable results, and

legal and regulatory risks.

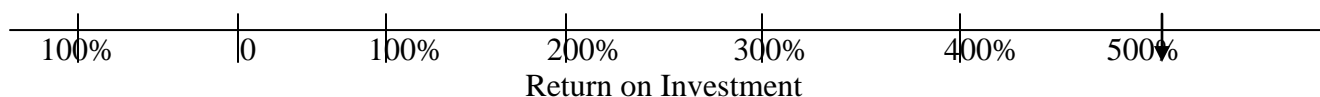
Opportunity Costs.

New product development often requires the commitment of significant resources and the incurrence of substantial legal and accounting fees. Those involved in new product innovation are often among the most gifted and creative individuals in the firm. As in more conventional research and development activities in industrial corporations, the cost for these resources is substantial. In addition, risk continues as the marketing process demands future time and energy prior to launching the new product. If new products are not accepted by the market or if they fail to solve legal, accounting, tax, regulatory or economic problems, the firm has already incurred these direct costs. Perhaps more importantly, it has also suffered the opportunity cost of not employing its new product development and marketing resources in more products efforts.

Product Concentration Risk.

A useful model for a financial service firm engaging in product innovation is that of the venture capitalist. New financial products, like seed venture investments, have a high variance of returns. As shown in Figure- VIII:II an investor in venture capital-type investments depends on the extraordinary returns of a few investments to outweigh the minimal and often negative returns of a majority of the investments. As a result venture investors take a portfolio approach. They ensure that the number of investments is large enough to include a few winners. A firm would expose itself to extreme product concentration risk if it develops only one or two new financial products. Odds are that with only two products, neither would deliver the return necessary to justify the high risk of a new venture-capital-type investment. Financial products are their inability to diversify their new product investments. A larger firm can mitigate this risk with a steady flow of new products, some of which deliver extraordinary returns.

Figure II
Return on a Portfolio of Venture capital-Type Investment



Reputation Risk

The impact of a new product on a firm's reputation is the most difficult element to assess, but it carries the most damaging potential consequences. Financial innovation and new products can create negative perceptions in a variety of ways. Financial innovations have adverse effects for the system as a whole by introducing excessive leverage or creating additional volatility. For example, program trading has been criticized for causing volatile stock prices.

Since many new products address legal, tax or regulatory issues, their developer must ensure that the new products are not inappropriately aggressive. The classic distinction between tax avoidance and tax evasion illustrates these issues. Financial products which cross the line are ethically inappropriate and may tarnish credibility.

Future Responsibility Risk

Any new, untested product carries the potential to surprise issuers or investors. If the security does not perform as expected by either side, the disappointed party may believe that the

financial services firm did not correctly anticipate or explain these impacts. This situation can easily occur with the many new, highly leveraged financial products. During periods of market discontinuities, structured trades involving currency or interest rate relationships have caused substantial unexpected losses. Serious customer disappointments create risk for the financial services firm inappropriately sold or sponsored the new product and should bear the financial losses. Client may claim that they did not understand and are not responsible for highly complex and sophisticated transactions. In some cases, parties have even alleged that the individuals or government bodies entering into transaction did not have authorization to do so that this factor invalidated certain traders.

These situations are extremely unfortunate. The invariably cost a financial services firm time, money and goodwill. Managing this risk involves a variety of activities beginning with careful selection of the parties to whom new products will be offered. Ensuring the suitability of the product for either the issuer or investor provides the most important form of protection. Dealing with sophisticated corporations and institutions rather than individual investors or political entities in the early stage of a product offering is a typical and routine safeguard.

Legal Risks

Numerous legal issues are involved in new product introductions. One example of legal risk arises from the complexity involved in global execution of new product transactions. In many cases, financial services firms and their clients enter into a multitude of transactions, many of which may offset each other to some extent. The legal ability of the financial services firm to "net" these transactions in the event of a credit problem helps determine the amount of risk which the firm may undertake. Additional issues may arise if the transactions are consummated through various subsidiaries in different localities under different government laws. Managing these risks requires careful analysis of enforceability of contracts and the ability to net exposures incurred in different legal jurisdictions.

Conclusion

Financial services firms face increasing requirements to develop new products that meet client needs. These products protect market positions and offer enhanced profit opportunities. At the same time, many of these products involve greater levels of both implicit and explicit risk than the older products which they complement or replace. Financial services firms have responded by more powerful quantitative techniques and more comprehensive reporting systems. Even if risk could be measured perfectly, which it cannot, management would still need to determine the amount and types of risk it desires to bear.

Reference:-

Stephen Friedman, Senior Partner of Goldman. (Risk Management "Problem and solution" by: William H. Weaver and George Parker (Stanford University))
Monte Carlo (Risk Management "Problem and solution" by: William H. Weaver and George Parker (Stanford University))