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# The factors generating financial innovations

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**Abstract**:

This research deals with the factors that produce financial innovations,these innovations mainly represent the production of new ideas can be applied to achieve financial income returns on the innovator of this tool and then become financial transactions that are traded with in the financial markets by investors and market dealers in financial markets and between financial institutions, The innovations that have been introduced in recent years, were the result of exploiting opportunities provided by changes in the economic and financial environment, and some of them were the result of the of new legislation regulating financial transactions in the financial markets, and other are the result of technological changes that can be employed in the field of financialtransactions.

To be acceptable, financial innovation must be tested to ensure that it can be applied without negative consequences for financial transactions and, that it respects the legislation regulating the financial markets.

**Keywords**: financial innovation; financial market; financial environment; credit risk; country risk.

**JEL classifications codes: G10 ; G11**

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**I- Introduction:**

Innovation is the act of applying an invention, putting an inventive idea into profitable operation. Therefore the difference between innovation and invention is that innovation is an invention which able to be implemented and can become operational.

Financial innovation involves all processes of design, development and the implementation of the instrument or process. It also involves the formulation of creative solutions to the financial problems.

Financial innovation could mean financial instruments such as swaps, forward contracts, and futures, orit could mean new bond issues such as original issue deep discount bonds, or it could mean a new instrument, which can result from combining some existing ones such as stripped Treasury securities. It can also mean a creative solution to a corporate finance problem such as the use of computer technology by management to create its own cash management.

The understanding of the determinants of the process of innovation is a more complex problem. Therefore, it is better to understand what factors cause the emergence of some new particular instruments. In recent years, many new financial instruments have emerged due to economic conditions, which created specific opportunities. In very general terms, a financial innovation process is any financial instrument, which can be viewed as a combination of characteristics -yield price risk, credit risk, country risk, liquidity marketability, pricing conventions, size, or duration-.

There is wide agreement on the major economic and financial forces that have generated innovations; at least in recent years. The last twenty years witnessed a rash of financial innovation. The forces behind the emergence of these innovations differ from one to another.

**The question of the study:**

What are the real factors that contribute to creating financial innovations?

**Hypothesis:**

Financial innovation can result from tax change

Financial innovation can result fromregulatory change

Financial innovation can result fromtechnology change

Financial innovation can result fromcompetition

**The Objectif of the study**

This study aims to identify the real factors and causes that generate new financial products called financial innovations.

.II- **Background of the study:**

Financial innovation and the firm's environment:

William, Silber (1983) argued that most evidence suggests that innovative activity is in response to economic forces.

Ben Horim and William Silber (1977) argued that innovation of financial instruments and practices occurs in an effort to remove or lessen the financial constraints imposed on firms. Taking this as a basic hypothesis it can be found that constraints could be, government, regulations, or economic constraints, these constraints are imposed both internally and externally. Among the most prominent external constraints are government regulations, but the market place also constrains the firm's optimization problem.

The behaviour of the financial firm is constrained by other factors as well, some of them are self-imposed. An example of self-imposed constraint is the principle of maximizing the utility subject, at least to balance sheet constraints where the sum of all assets, minus liabilities and capital, equals zero. The target rate of growth for total assets could be a self-imposed constraint, or self-imposed liquidity requirements or any other objective set by the firm. It therefore becomes a self-imposed constraint, which can lead to the creation of new financial instruments or practices.

To remove the constraints new financial instruments or practices have to be innovated. The innovation occurs whenever there is an exogenous change in the constrained optimisation of the firm that stimulates a search for new policy tools.

Exogenous change can be divided into two types; one is when the constraint reduces the utility of the firm, the firm innovates to return to its previous level of utility, and the other one is when the firm innovates in response to an increase in the cost of adhering to the constraint, translating this case into a programming context, this corresponds to an increase in the shadow price (dual value) of the constraint. As the cost of the adhering to a constraint rises over a period of time, it will intensify the search for new financial instruments.

The sharper the rise in shadow price the greater will be the innovative effort.

In other words, we can conclude this assumption by saying that the main innovations in this case are a reaction to profit opportunities.

Change in tax regulations:

Modern statics provide some helpful distinctions between innovation and just plain improvement. Financial innovations are unforecastable improvements; however, it is not to suggest that their emergence is a matter of chance or of artistic creative impulse. Miller (1986) in his paper argued that the major impetuses to successful financial innovations over the past twenty years are regulations and taxes.

Modern finance assures that securities can be used to transmute one form of income to another; in particular, higher taxed forms to lower taxed ones. Each innovation, resulting from tax change, that does its job successfully, earns an immediate reward for its adopters in the form of tax money saved. Any successful innovation must have reduced transaction costs and must span the reach of the market; otherwise, it is not considered a successful innovation.

It is worth taking the case of zero-coupon as an example for tax generating innovation, (Smith and Taggart 1989). According to the USA Internal Revenue Code, section 368 (a) (1) an original issue discount (OID) bond has to amortize the discount on a straight-line basis over the lifetime of the bond. An OID bond is one in which the issue price is less than 100 minus 0.25 times the number of years to maturity for example, if the price

of a 10-years bond is less than 79.5% of the face value at issuance, it's considered OID for tax purposes.

The issuer of the bond treats the amortized amount as an interest expense, so it becomes a tax write-off and is also seen as interest income by the investor. As a result, the bond issuer has a tax obligation even though no cash is exchanged.

The straight -line basis has allowed the corporate issuer to have a tax-deductible expense larger than the true financial expense, lowering its effective cost of funds.

The value of the net tax advantage to the corporate issuers was attractive only in periods of high interest rates.

The result of the process was a large volume of corporate zero-coupon issues in 1981 and early 1982. For example in Japan the zero maturing approaches was treated as capital gains rather than an accrual of interest and as such capital gains were untaxed, consequently the zeros had a substantial appeal to taxable investors.

Price-risk-transferring:

Price-risk-transferring is the most prominent element of the new wave of financial instruments. The increased volatility of asset prices is the force behind these changes and the most important volatile elements are exchange rates and interest rates. Inflation has also played a major role. However, the volatile exchange rates and interest rates are behind most of the innovations designed to transfer the asset price risk. Examples of that are as follows:

(A) Assorted Euro-bonds linked to certain commodity prices (gold, silver, oil...etc.).

(B) A future contract offered US consumer price index.

(C) The issues of explicitly indexed UK and Italian government debt.

Regulatory changes also contributed directly to the demand for price-risk-transferring innovations. The elimination of deposit rate controls threw

some financial intermediaries, particularly thrift institutions into a severe structural balance-sheet mismatch, they were then motivated to innovate floating rate instruments on their asset side and to utilize other innovations such as futures, options, swaps and forwards to hedge their price exposure.

Credit risk-transferring innovations:

The increased vulnerability of existing financial positions to in terms of their creditworthiness deteriorating has increased the demand for credit-risk-transferring innovations.

The confluence around mid-1982 of the problems in the energy sector and the LDC debt crisis with the financial strains brought on by a fairly severe recession in large parts of the industrial world, produced a new level of risk. The creditworthiness of many international banks that were principal lenders to all classes of weakened credits was called into question.

Boards' worries about credit problems spurred the development of innovation in order to transfer these risks.

Willing to hold the direct obligations of non-banks in their shift towards capital-market instruments emerged.

Banks themselves sought to benefit from the trend by generating loans and selling them off, either directly or packaged as securities, or by expanding their role as guarantors of capital-market instruments.

Liquidity enhancing innovations:

The demand for liquidity has led to the creation of new financial instruments, which involved new techniques for providing transaction liquidity as high interest rates greatly increased the opportunity costs of holding transactions liquidity in traditional forms. Cash management programs, money-market mutual funds and new types of negotiable deposit accounts all played this role.

In addition to higher opportunity costs of traditional transactions, vehicles for accounts for increased demand liquidity depend on two factors, the first is the worry about the creditworthiness of banks; this has caused a shift of investor from deposits to capital-market instruments. Generally less liquid vehicles, recognised as a deposit instrument, which can be converted

back into cash at full force value at notice, if not on demand in normal conditions, resulted from the loss of liquidity creating a demand for innovation that would seek to restore it. The second factor is increased leveraging which has been an especially prominent force in the USA.

Credit generating innovation:

This type of innovation appears to work in two ways:

**1**One is concerned with the instruments that support the issuing of new borrowing.

Examples:

(a) Leverage buy-out financing, basically supported by the future expected cash flows of the firm.

(b) Equity access account, which allows the homeowners to draw against a line of credit supported by the appreciated value of their houses.

**2**the second one is to tap new sources of credit, which can be done in two ways:

a) Direct way as in the case of **Junk bonds**:

The Junk bonds market was able to win business away from commercial banks, by taking debt contracts that would formerly have been held as bank loans and selling them in the public market.

Because only firms with investment-grade credit rating could raise funds directly from the credit market, less established companies have been relying on short-term, flattening-rate bank loans. The original issue in the Junk bond market has provided below-interest-grade firms with an opportunity to raise long-term funds in the national credit market (USA).

By issuing "**Junk**" debt instrument, these firms are able to attract investors who previously had not actively financed commercial activities by relatively small firms. The growth of this kind of bond is considered as part of the phenomenon of securitization.

By the end of 1988, the amount of outstanding debt exceeded $180 billion, more than 20% of the total public corporate bond market. The tremendous growth of Junk bonds was fuelled by the realization of the flexibility and rapid access to capital which was afforded by Junk bonds and that they were ideally suited to leveraged buyouts, takeovers, and other corporate restructuring, (Eric, S. R.1990).

Despite the advantage of disintermediation loans, opponents of Junk bonds have sought to discourage such investors. They have achieved this by limiting those intermediaries who can hold Junk bonds and, by eliminating the tax deduction for interest paid on Junk bonds.

b) Indirect way for example through liability-based interest rate swaps, swaps are discussed in detail in chapter two.

A demand for credit is one of driving forces, which generate new financial instruments. In addition to that overall demand for credit, there are some forces, which produce broad shifts in the pattern of credit demand:

1) As mentioned earlier, that because of bank creditworthiness, investors tended to shift their preferences towards the capital market. This created opportunities for companies to tap into new pockets of investors through new securities such as Euro-bond issues.

In recent years, the investment banking business has shifted away from what is known as relationship banking" and has become more competitive, and hence, more transactional. Developing an innovative security provides an opportunity for the financial engineer to solicit business from companies that have traditionally used other investment bankers. A successful innovator is usually awarded a mandate to sell the new security on a negotiated basis, rather than having to bid for securities "off the shelf" as is the case of commercial debt instruments. Investment banks therefore have a strong financial incentive to engineer innovative securities.

2) In late 1981 companies in the USA and Europe started to utilize the Euro-bond market actively as an integral part of their financing plans. This was promoted by the maturing of the liquid secondary market in Eurobonds.

Access to this market was for top-named companies therefore, lesser-known companies were put at a potential disadvantage; they were relatively dependent on traditional sources of finance, particularly bank borrowing, while their competitors still retained access to funds in a broader range of markets. Since the scale of their operations would be limited by the scale of available finance. This potential problem created a demand among a broad range of companies for innovations that would widen their access to new sources of credit.

Junk bonds emerged as a new financial instrument, which would provide the less-known companies with the possibility of raising long-term funds directly from the market without intermediaries.

3) Derogation in different national markets created complex arbitrage opportunities that were bridged by new instruments. Some borrowers find themselves with access to certain types of funds in particular markets, but no need for such funds for their own use; other borrowers have a desire for such types of funding.

This situation is a common settling ground for complicated swap dealers involving multiple-currency features.

Different tax treatments of new instruments promoted the development and diffusion of financial innovations. The well-known example of this is the relatively liberal Japanese treatment of accrued interest on zero coupon bonds until the end of 1985, where the zero coupon approaches maturity was treated as capital gains rather than an accrual of interest and such capital gains were untaxed.

Equity-generating innovation:

There are two examples of equity generating investors:

1) Variable rate preferred stock, which is structured to pay a dividend that varies with market interest rates, this tends to preserve the asset value of the equity from fluctuations and enhances its liquidity and tradability. Variable rate preferred stock is a financing device that has been used principally in the United States. In the United Kingdom perpetual floating

rate notes, which have similar feature of variable rate preferred stock -have been used especially by banks- as a means of raising primary capital.

2) A notable innovation is the monetary convertible debenture, a debt instrument that must convert to equity in a definite time period.

The two new instruments have been used extensively by commercial banks; this was a result of regulations demands for increased capitalization in banking. Those demands are the dominant force behind equity-generating innovations. The demands of non-bank companies for equity finance have -on balance- been relatively limited in 1980s.

Change in economic activity level:

Financial innovation can result from change in the level of economic activity or it can be stimulated, (Van, Horne, 1985). In periods of prosperity, financial institutions are eager to implement new ideas, instruments, or processes in order to achieve as much as they can of growth, whereas in periods of recession the intention is usually to find new vehicles, which provide risk reduction and liquidity.

In 1981 and 1982, periods of steep recession, the emphasis shifted to risk reduction and liquidity. If we look at international banking, it can be found that the financial innovations, which occurred in the 1970s, were mainly directed to business expansion.

Currency option loans, parallel loans, special swaps arrangements, and many other innovations were undertaken in the quest of higher loan volume. New business -at low spreads- was the result. The variation in economic activity levels affects both the magnitude and type of funds needed, and also the risk attitudes of financial institutions and other market participants.

Forces increasing the supply of financial innovations:

a) Technology: new technology had a major impact upon the financial system of the 1980s.

The element of technology used to be limited in providing information to help make better decision, but in the 1980s technology became a strategic tool for creating new products and delivering old ones more efficiently.

Information processing and computing are major factors to the growth of financial innovations.

The greatly reduced costs and expanded scope of telecommunications have created a global financial market in which providers have to innovate new instruments to match up with end-users especially those end-users who were in isolated markets. They were able to gain access to these markets due to new technology, which gave breadth, and depth to trading, therefore encouraging financial institutions to make markets in new instruments. The new technology allowed financial management to continuously monitor the exposure they have generated from running books in the new instruments, design, and carry out complex hedges for those exposures.

The new revolution in technology, especially in electronics used in delivering financial services, has transformed banks into cash managers, brokers into banks, wholesale financial firms into retail ones, and absorbed local and regional financial firms into national and international conglomerates. The element of technology has given the customers access to financial products and lowered the cost of this access, in other words the delivering of financial services has become more efficient by introducing new electronic networks, which now enables transaction terminals to work faster, and more accurately than the employees they displace.

By adopting new technological changes, financial institutions are now better able to deliver services in better quality and at lower costs, therefore the financial services industry has spent more on technology than any other industry, (Robert, C. and Kosky, K. 1989)

1: Merril Lynch: used computer technology to create its cash management account. This new product is considered as one of the most successful new product ever. The introduction of this new product by Merrill Lynch has attracted over $90 billion since 1987.

2: NYSE: has spent over $200 million to develop and implement the super DOT (Designated Order Turnround) system which electronically sends member firms' orders to the floor for execution and execution reports back to the member firms. In October 1987, the system showed

the capacity to handle peaks in daily trading volume in excess of 600 million shares.

The new technology impacts:

1) Creating a scope economy, which allows complementary financial services to be produced more cheaply.

2) To minimize financial transaction costs and derive it closer to zero.

b) Regulatory factors: the increased pressure by banking regulators for a stronger capital structure in banking. It was a very important force created in a new environment, which helped the new financial instruments to appear.

Banks have been required or encouraged to operate with a lower gearing ratio, that is a lower balance sheet asset to capital, at the same time the cost of raising capital was very high for most of the banks, and the asset quality promoted the regulators' demands for enhanced capitalization. These three conditions together pushed banks in the direction of earning revenues through off-balance-sheet activity that did not tie up capital through the new instruments known as swaps, options, and forward agreements.

An example of government regulation which took place in the U.S.A in the 1970s (Smith and Taggart 1989) where a corporation can issue European or Eurodollar bond in London and neither issue will be subjected to U.S securities regulation is an interesting case in point.

c) Financial competition:

Competition contributed to the willingness of financial institutions to supply new instruments in two forms: one is the increased competition between different financial systems, and the second is the increased competition between banks and non-bank financial institutions within national financial systems.

The new technology has given rise to competition because it enables any company from any business tradition to generate and control offers of generic versions of financial services - loans, deposits, credit cards and insurance are all important examples.

In his paper,Van Horne (1985) argued that innovation will continue to flourish as financial markets and the financial services industry become even more competitive, and evidence shows that the revolution of financial innovation will continue.

d) Volatile inflation and interest rates:

Transforming the maturity risk in the balance sheets of deposit institutions from reliable sources of average profit into a frequent source of substantial loss was due to interest rate volatility. This has focused management' s attention in the very short run and led them to reposition their firms in ways that have progressively undercut their long run share of the saving market.

The interaction between fluctuating market interest rates and deposit-rate ceilings has greatly influenced the speed and geographic spread of the robotization and electronic wiring of the system for delivering financial services of firms and even households.

**BOND MARKET INNOVATION:**

Investors prefer high returns, low risk, and high liquidity. These factors characterize any kind of bond or financial instrument. However, the issuers will not provide a bond with high return, low risk, and high liquidity at low cost. Hence trade-offs will be determined by supply and demand.

Demand: the trade-offs are influenced by:

1- Distribution of investable wealth.

2- Tax rules.

3- Regulatory restrictions.

4- Perceptions of the relative importance of various risk categories.

In the 1980s, Japanese financial institutions have accumulated a great deal of the world's total investable wealth and it was understood that it was due to tax and regulatory rules.

Investors have become more aware of interest rates and currency risks after it had been thought in the 70s and 80s that the most important

category of bond risk was credit risk. Increased sensitivity to the risks has generated a demand for new securities with protective features such as floating-rate notes and the zero-coupon.

In addition, there were new investment strategies in order to tailor the overall risk of the portfolio in a precise way such as using hedging through different instruments such as swaps, and futures.

The market's volatility generating these risks has increased the demand for liquidity.

Investors discovered that risk-management strategies require a liquid portfolio.

Supply: on supply level the bond issuers have to issue securities that minimize the cost of providing a given financial services package.

The cost of providing services consists of two elements:

1- The cost of executing transactions.

2- The cost of bearing financial cost.

The issuers are affected by available technology, tax, and regulatory rules, and by the ability to offset various forms of risk:

a) Securities and Exchange Commission Rule 412 in the USA has affected the relative cost of issuing debt in public and private markets, although the rule was introduced to make it faster and easier for large companies to bring a public issue to the market.

b) Advanced technology in information processing provided easier access to the debt market.

c) In 1981 zero-coupon and other original issue discount bonds, due to the advantageous way that issuers could deduct the discount amortization from annual tax payments.

d) Floating-rate notes have been frequently issued by commercial banks since their investment rate is hedged by the tendency of their revenues to vary directly with interest rate.

The demand meets supply in two ways:

d.1) Issuers supply bonds with characteristics that ultimate investor's desire.

d.2) On an intermediary purchase the debt security issues a claim on itself matching the investor's desire, this is the traditional role of commercial banks; purchasing debt from businesses by making loans to them and issuing more liquid less risky deposits to investors. The characteristics that ultimate investor's desires are different kinds of risks, therefore to meet these requirements, some investments have to be innovated. Swaps developed in order to allow issuers to offer securities in either fixed or floating-rate form in any currency and then swap the associated profile of interest "rate and currency risk for another, more desired profile.

The best example is when investment bankers are playing the role of intermediation by buying market securities and repackaging them for sale to investors an example of this is stripped treasury bonds, which will be discussed, in next chapter.

It has to be noted that such activities are altering the role of banks from their traditional position to a new role in business such as the market maker-role many large commercial banks have assumed in the swaps market.

CONCLUSION:

A wave of financial products has been generated in recent years through the combined pressures of increased financial market volatility, technological innovation, government regulation, tax regulation, economic level especially recession, and change in the firm's environment. The financial products could be a result of just one factor or a combination of them.

Many of these products are valuable additions to the tools investors and financial intermediaries use in their portfolios.

Market forces play a major role in accepting many of the new instruments such as bonds.

The demand for securities, tax rules, regulatory restrictions and the supply of new information systems have played a role in issuing different bonds as new financial instruments.

This kind of environment has even shifted the role of commercial banking from providing loans to a new scope of business such as the market-maker role (swaps).

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