MOTIVATIONS AND DETERMINANTS OF INNOVATION IN FINANCIAL MARKETS

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Abstract
The role played by innovation in the modern economy is a fundamental one, with both positive and negative effects on economies and society. A successful financial innovation should lead to a better financial service, reduce costs and risks, contribute to the efficiency of the financial system and economic development. Over time, there have been several attempts to explain the motivations and determinants of innovation in the financial markets. The aim of the article is to identify the motivations and determinants for innovation in the financial markets, as described in the economic literature. The motivators and determinants of financial innovation are different, depending on the category to which they belong to (products, processes, platforms, institutions, etc.), the needs of different actors, changes in the economic, scientific, and social environment. Financial innovation is a continuous and complex process, making it difficult to fully identify and understand its configuration and estimate its consequences. Therefore, financial innovation adds an element of uncertainty to the economic environment, bringing through its presence both positive and negative elements.

Keywords: *innovation, financial markets, determining factors*

JEL Classification: *G10, O30*

1. Introduction

Although innovation has played an important role for financial markets, the approach of this topic in the literature is somewhat recent, focused on certain areas, while research often brings different results into the debate. It is obvious that the role played by this type of innovation in the modern economy is a fundamental one, with both positive and negative effects on economies and society.

When using the term financial market innovation, reference may be made both to the introduction of new instruments on the financial markets or the way they are offered, and to the change in the structure of financial markets and the functions of financial institutions, new forms of organization or to more developed and sophisticated financial markets. An important element is also the technological advance that affects the access to information, the way of trading and payment, the way and the reaction time in case of financial decisions.

A successful financial innovation will entail to a better financial service, reduce costs and risks, contribute to the efficiency of the financial system and on the whole economic development. By introducing new, well-made financial products, markets become more complete, deeper and more liquid, and prices become more competitive.

When we discuss about innovation in the financial markets, we can develop research on three main levels:

- financing of innovation (of innovative companies);
- classical financial innovation, namely innovation of financial products and services, types of contracts, financial operations, institutions, monetary policy (monetary innovation / surprises);
- technological innovation.

The first and last aspects are treated in Lupu and Criste (2020b) and Lupu and Criste (2020a).

Given these aspects, we find that the definition of innovation is specific, depending on the elements and segments we refer to, and the expected as well as obtained results are different.

Over time, there have been several attempts to explain the motivations and determinants of innovation in the financial markets. Some authors approach the problem of the impulse for innovations from a dynamic point of view, by assigning an important role to changes in the economy in triggering the innovation process, while other authors do not consider this important.

Financial innovation can be based on different motivations and determinants depending on the category to which they belong to (products, processes, platforms, institutions, etc.), the needs of different actors, changes in the economic, scientific, and social environment. As was mentioned before, the question of the category of companies with the most or most successful financial innovations is still under debate.

Studies to date have also considered related issues such as innovation design, estimating the impact (direct or collateral) or innovation success. In addition to elements of creativity, innovation will always contain and associated risks (Byrd and Brown, 2002), but will also contribute to economic development (Panduru, Neamțu and Neamțu, 2020).

The considered research methodology consists in logical and descriptive analyses, and especially in bibliographic exploration by identifying the main trends in the field. First, we present the concept of classic innovation in the financial markets, as it is understood in the economic literature, and then we fathom the key drivers and motivations that lead to the development and adoption of innovations in financial markets.

The paper proposes to examine innovation in financial markets as it may affect the following financial and economic policy decisions, while being an aid to identifying risks, but also a possible risk taker. Innovation also brings changes in the dynamics of financial markets and in regulatory and supervisory activity. The aim of the article is to identify the motivations and determinants for innovation in the financial markets. The topicality and importance of the subject is also reflected in the orientation of European funding towards innovation and, at the same time, in the promotion and support of the development and adoption of new technologies.

2. Classic innovation in the financial markets

Innovation has every when been persistently present in the financial services industry, playing a decisive role in the economic space. One of the discussions on innovation in the financial markets is the distinction between product innovation and process innovation. In addition, the idea of spreading and then accepting innovation appears.

An interesting study is that of Matthews (1994) which suggests that the development of new financial products drives competition, and firms are thus forced to integrate them into their business. The adaptation of companies to the emergence of new financial products allows them to progress more compared to those who fail to do so.

In addition to the fundamental products and institutions existing on the financial market, a variety of products, services, practices and institutions have emerged over time, and the literature has tried to identify, analyse and classify them, observe the determinants and the impact of this type of innovation, economically and socially.

One of the first papers that scientifically present a theory of financial innovation is the one published by Silber (1975), which is based on the hypothesis that new financial instruments or practices are developed to reduce market constraints, but without taking into account calculation of the role of institutions. An important conclusion, which is also found in further studies (e.g. Scherer and Ross, 1990; Lerner, 2006) is that smaller and weaker firms, most exposed to constraints, are also those that innovate more. But there are also opinions (Tufano, 1989; Matthews, 1994) that support the idea that the most important financial innovators are the largest investment banks.

Logically, from this topic derives the process of expansion and adoption, with important significance for the success of innovation.

Classifications of innovation on financial assets were tested by Finnerty (1992, 2001) according to the types of financial instruments in this category and their function, but also by Tufano (1995) who analysed them "from the historical and functional perspective". Innovation in the international banking system was analysed by the Bank for International Settlements (BIS, 1986), and the conclusion presented was that the best choice for a taxonomy is also the functional approach. However, even a single classification (based on functions), widely accepted in the literature, would not solve the problem of classifying financial innovations, as they can be anchored simultaneously in several functions.

As in other areas, there were periods of boom and periods in which the pace slowed down or even anti-innovation currents emerged, sometimes as a result of failures. As Tufano (2003) points out, financial innovation "is a continuous process through which private parties experiment to try to differentiate their products and services, responding to both sudden and gradual changes in the economy", the dynamics of the innovation process financial being captured in economic research (Persons and Warther, 1997; Reinganum, 1989).

In the recent period, innovation in financial markets can be common, familiar (e.g. ATM), it can be complicated by contracts or new operational procedures. Moreover, the degree of innovation brought to these products and services is questioned. Some of these may be completely new or may be adaptations of existing ones. In fact, Merton (1992), referring to the dynamic process of financial innovation, calls it the "spiral of financial innovation".

However, the problem of identifying truly unique products and services is a real one in research efforts. Many of the new products are adaptations of older products and services to meet the new requirements and trends identified by companies in the market. Were also identified situations in which products and services newly introduced by competitors were slightly modified, possibly given a different name and then were introduced in the companies' offers. The high speed with which innovations in financial markets appear is also fuelled by the possibility of combining financial instruments (Lerner and Tufano, 2011).

The word innovation is also used to convey the shocks of the economy. One such example is innovation in monetary policy or money market "surprises" (unexpected monetary policy interest rate decisions).

3. Determinants of innovation in the financial markets

The determinants of financial innovations are most often present in the form of a combination of economic, political, institutional, technological, economic factors.

The (in)success of some products or services can determine the improvement of the products or services, being an adaptation to the market conditions. Adaptation to the market can take the form of taking over in a slightly modified configuration the products and services offered by competitors, thus contributing to their spread and naturalization. Other situations may increase the quality of some products or services or increase their availability to customers.

Demand (real, perceived or apparent) for new products or services is another determining factor. In the economic literature (Gennaioli et al., 2012), the dominance of demand-based factors is considered to be elucidated for the time being. The authors consider that the results confirm the conclusions of previous studies and recognize the advantages of providing safe products, but point out that there have been neglected risks that have allowed the replacement of traditional financial products with inappropriate ones.

Regulation is often perceived as an obstacle to the development and expansion of business activities. Thus, among the successful financial innovations are often mentioned the various forms of taxes and duties (Miller, 1986). Such innovative products were zero-coupon bonds (Fisher, Brick,

& Ng, 1983). On the other hand, regulations and taxation have also inhibited the emergence of innovation, such topics being analysed by Gergen and Schmitz (1997), Warren (1993), Knoll (1997) and Strnad (1994). In recent years, the pace of innovation in the financial markets has created difficulties in the regulatory system, especially in achieving objectives such as ensuring financial stability, protecting investors or preventing misconduct. Over time, it has been found that the level of innovation in the financial markets depends on the institutional structure, with greater competition leading to more innovation (Boot and Thakor, 1997).

The economic literature raises the issue of covering the "imperfections" of financial markets with financial innovation. It is considered that preventing market participants from achieving the desired results stimulates the emergence of innovation.

The issue of risk sharing is used as an argument for the emergence of innovation in financial markets. Thus, Allen and Gale (1988) thought that an optimal way to satisfy market imperfections would be to divide a company's receivables according to investors' preferences and offer them differently.

Problems arising from agent theory are invoked to explain the emergence of innovation. Ross (1989) justifies innovations in the light of cost of marketing and investment intermediation (by institutional preference); moreover, innovation is considered a way to solve the moral hazard.

Trading costs have also been considered determinants of the emergence of innovation by Merton (1989) or Madan and Soubra (1991). Heinonen (1992) included the cost of production and the cost of distribution to study innovation from the perspective of game theory.

The evolution of macroeconomic factors is an important determining factor for the occurrence or reduction of innovation in financial markets. As Smith, Smithson and Wilford (1990) point out, innovation has been encouraged by increased volatility (interest rates, exchange rates, prices for various commodities), which also means an increase in risks. Moreover, globalization has allowed businesses to spread around the world and therefore exposure to new risks, which has led to the emergence of new forms of innovation.

Many less common financial products have been developed to meet special demands from a few investors (e.g. financial products in the derivatives category).

Technological development, considered an exogenous factor of the financial system, has driven the emergence of innovation in financial markets. Older and newer examples of works that inventory the innovations stimulated by the technological factor are the works published by Schmookler (1967) or White (2000).

The complexity of financial innovations has its determinants, grouped in the economic literature (Awrey, 2012) in three categories: "those that influence our ability to process information, those that affect the availability or intelligibility of information and those that accelerates the speed of information change".

4. Motivations for innovation in the financial markets

We can say that innovation in the financial markets occurs due to the fact that market participants are constantly looking for increasing profits. Financial gain is targeted by pursuing several objectives: increasing revenues, reducing costs (trading, liquidity, efficient allocation of resources, etc.) or a combination of these. The intention to maximize profit is accompanied by the intention to minimize risk.

Exploiting legislative ambiguities is another motivation for the emergence of innovation in financial markets. Innovation contributes to maintaining a company's activity and success in the future, and in order to resort to innovation one does not always expect the emergence of a need or try to avoid regulations, but can also seek to find innovative solutions for survival or growth in the market.

These situations were divided by Llewellyn (1992) into several categories to highlight the reasons for the emergence of financial innovation:

- "defensive" reasons, financial innovation being a reaction to regulatory or policy constraints;
- "aggressive" reasons explained by the desire to invent new financial products and services with potential success;
- "receptive" reasons that occur when changes in customer behaviour are identified;
- "protective" reasons leading to financial innovations stimulated by portfolio constraints.

In the financial field, the evolution of markets has led to the development of complicated analysis models that are an example of creativity. These models are not actually a final product, but are used as enablers who later contributed to innovation in important financial sectors (Merton, 1995). Another category of facilitators is represented by technologies and software necessary for the operation and use of products and services (for example for ATMs - Harper and Batiz-Lazo, 2013 or trading algorithms - Kirilenko and Lo, 2013).

Some authors include in the category of facilitators and financial indices (especially stock market ones) which are mainly used to compare a price or a certain trend with a reference value (Khraisha and Arthur, 2018).

5. Conclusions

Financial innovation has developed a lot in recent decades, and the financial field is considered to be more and more innovative. Even if the directions of research on financial innovation are oriented towards several fields (regulation, analyses on microeconomic and macroeconomic aspects, determinants, related influences, empirical studies on the innovation process, etc.), the knowledge remains incomplete in several respects.

Limited access to statistical data and measurement difficulties confine research possibilities regarding innovation on financial markets. This unfavourable condition for conducting research is often mentioned in the economic literature associated with financial innovation. The lack of patents for financial innovation makes it difficult to measure. In fact, patenting is one of the proposals found in the economic literature to mitigate several negative effects that financial innovation would produce. Limited amount of data is collected at the level of financial institutions for other two indicators (research and development expenditures and research staff). One of the suggested proposals to improve this situation is the request information on financial innovation by the instrumentality of supervisory institutions.

The motivators and determinants of financial innovation are different, depending on the category to which they belong to (products, processes, platforms, institutions, etc.), the needs of different actors, changes in the economic, scientific, and social environment. Subsequently, financial innovation affects the performance and development of the innovating institution, but the effects affect the real economy and society as a whole.

A successful financial innovation is expected to determine a better financial product or service, reduce costs and risks, contribute to a stronger financial system and economic development. By introducing new, well-made financial products and services, markets become thorough and more liquid, and prices become more competitive. However, the innovation activity is not always followed by the expected results, a favourable market reaction or an increase in profit as a result of investments made or the adoption of a financial innovation, the success rate being difficult to estimate.

In a volume (Haliassos, 2013) containing several opinions (among the authors are Shiller, Barberis, Campbell, Shleifer, Issing, Ackermann) on financial innovation we find arguments to support the idea that there is not much on the market, but on the contrary, too little financial innovation. What is considered necessary to prevent future crises is to create a (regulatory) framework to support the informed use of financial innovation.

As financial innovation is in fact a continuous and complex process, it is difficult to fully identify and understand its configuration and estimate its consequences. Therefore, financial innovation adds an element of uncertainty to the economic environment, bringing through its presence both positive and negative elements.

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