

Possibilities of the Development of the Application of Financial Instruments in the Accounting Systems

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Abstract

The purpose of this research consists in the schematic presentation of the possibilities of implementing new financial instruments under the conditions of the use of advanced information technology tools. The progress of computer technologies based on artificial intelligence and the use of new hardware devices open opportunities for the instrumentalization of financing solutions in accounting. The present offers possibilities for economic entities to finance themselves quickly and at low costs, reducing the time needed to access additional monetary liquidity, compared to traditional solutions. Alternatives to classic bank financing are emerging. The use of alternative e-banking IT solutions is an important incentive for financing newly established businesses as well as existing ones. It must be pointed out the need for economic entities to invest heavily to equip themselves with new hardware and software tools. It's time for changes in approach regarding the implementation of information systems, of financial and accounting records.

Key words: financial solutions, accounting, technologies

J.E.L. classification: M41, G32.

1. Introduction

There are a multitude of financial instruments in use today.

Internet Banking, or online banking, is a term used for remote access payment systems used to conduct banking transactions via the Internet. These are banking systems that allow remote electronic access to available currency's on accounts in order to operate transactions and obtain statements about your own accounts. Such systems are represented by different applicable systems. (Nicolae, 2010)

Mobile Banking is a payment tool with remote access, which requires the use of a mobile device - smartphone, tablet and some services offered by telecommunications operators. (Nicolae, 2010)

The Internet Banking service provider represents that credit institution or non-banking financial institution that issues and makes available to the holder an electronic payment instrument, based on a contract concluded with it, and annually has the obligation to subject these systems to a strict approval process/ re-approval according to legal regulations.

2. Theoretical background for the application of financial instruments in accounting systems

Depending on their nature, the method of exercise and the content of the rights involved, financial instruments are classified as simple or derivative and non-complex or complex.

From an accounting point of view, financial instruments are divided into: assets, financial liabilities (IASB, 2022).

Here are some examples of financial instruments (IASB, 2022).

The bank deposit is the most common, best known and simplest financial instrument, used for both savings and investments. When you deposit a certain amount of money in a bank deposit, the bank will add interest for the time you keep the money in that deposit.

Stocks are another example of a very well-known financial instrument.

The social parts that the owners of a joint-stock company hold are the shares, and these are, of course, financial instruments.

Bonds are another type of financial instrument used mainly by the state, state entities and private companies, which borrow in the market and offer a fixed interest rate for the money they use.

Derivative financial instruments are based on the return offered by another financial instrument or commodity, called the underlying asset. In short, the yield of the financial instrument is derived from the evolution of the price of an instrument, commodity or other asset. Here are some examples of derivative financial instruments: gold; currencies; actions; stock indices.

Depending on the nature of the income it provides, we can have the following financial instruments with fixed income: bonds with fixed interest; state securities; land documents; preferential shares; or other derivative instruments. In addition to financial instruments with fixed income, we also have those with variable income which can be: shares, bonds with variable interest, derivatives (IASB, 2022).

Depending on how they are created, financial instruments can be primary, special, derivative or synthetic. When it comes to primary financial instruments, they can be basic, issued by capital seekers and investment funds, ie: shares, bonds or securities of collective investment undertakings.

In the case of synthetic financial instruments, they refer to stock index futures, options strategies, contracts for differences (CFDs) (IASB, 2022).

The general risks associated with investing in financial instruments are set out below.

Currency risk occurs in the case of transactions with financial instruments denominated in foreign currency, the performance of the investment depending not only on the local yield of the financial instrument on the foreign market, but also on the evolution of the exchange rate of the respective foreign currency against the portfolio currency.

Credit risk: for each issuer traded on the capital markets, it presents a certain degree of risk, given the fact that past performance is not a guarantee of future performance. Credit risk refers to the possibility of the insolvency of the counterparty, namely the inability of one of the parties to a transaction to fulfill its obligations, such as the payment of dividends, interest, repayment of the principal when due, or failure to fulfill these obligations in full. It is also called repayment risk or issuer risk. Such risks are classified using ratings. A rating is the rating scale used to assess the creditworthiness of an issuer. The rating is drawn up by the rating agencies, especially based on credit risk and country risk. The rating scale ranges from AAA (the best credit rating) to D (the worst credit rating) (IASB, 2022).

Country risk represents the creditworthiness of a particular country; this risk arises in the case of the solvency of a certain country, economic or political factors may have negative effects for all counterparties resident in that country (IASB, 2022).

Transfer risk: depending on the respective country involved, the securities of foreign issuers present an additional risk related to political or exchange control measures that may complicate or even prevent the realization of an investment. In addition, problems may arise in connection with the settlement of an order. In the case of foreign exchange transactions, such measures may prevent the free convertibility of the currency.

Total loss risk is the risk that an investment becomes completely worthless, for example, because of its conception as a limited right. The total loss can occur, in particular, if the issuer of a financial instrument is no longer able to fulfill its payment obligations (insolvent), for economic or legal reasons (IASB, 2022).

Price risk occurs in case of unfavorable price fluctuations of individual investments.

The risk of acquiring securities through credit: the acquisition of securities based on a loan presents a high risk, as the loan must be repaid regardless of the investment's performance; in addition, the costs of a loan reduce the value of the investment (IASB, 2022).

Sector risk occurs when a portfolio is made up of financial instruments of issuers active in the same sector of activity (IASB, 2022).

Market risk: in the market of financial instruments, phenomena that are difficult to anticipate can occur, events that can affect trading prices.

Interest risk is the risk that, in the case of an investment instrument with a fixed interest rate, the value of the investment will change as a result of the evolution of interest rates in the market (if the interest rate in the market is higher than the interest rate attached to the investment product, the

market value of the investment product is may depreciate).

Liquidity risk represents the impossibility or the possibility of financial losses for the client to liquidate the investment product when he wants to do so. If the client wishes to liquidate the investment product before maturity and the market does not identify enough buyers interested in purchasing it at a market price, the client risks recording financial losses due to the liquidation of the product at a price far below its market value - the market is illiquid (IASB, 2022).

3. Research methodology. Evolution of financial instruments used in accounting - empirical aspects of research

The research methodology used in this article consists of the empirical research of a data set available on the Internet and the construction of models of accounting records.

The methods and tools used to secure transactions with banking instruments run on a wide range.

Authentication with user and password is a classic method of recognizing authorized users, due to the limited level of security it offers, it is generally made available for accessing data with reduced requirements regarding the confidentiality level or for carrying out a limited number of operations with a reduced degree of risk on the client. Different methods have been adopted for establishing the username, from establishing a set of digits on a customer's card, to establishing it by the user at the stage of contracting the service. (www.ziare.com)

Physical token authentication involves the authentication device generating random codes, valid for a single use within a predetermined time interval, that will be used by users when authenticating into the application and signing transactions made through it. The device is made available by the bank when purchasing the Internet Banking service and, depending on its type, it can in turn be secured by means of a PIN code chosen by the beneficiary upon first use. In addition, the physical token can also provide a control code that appears on the Internet Banking page and is generated according to the code for identification. (www.ziare.com)

Virtual token authentication is an authentication method consisting of the automatic transmission of an access code with a limited period of validity via SMS. To use this authentication mechanism, it is necessary to communicate to the bank a phone number on which you want to receive messages. (www.ziare.com)

The encryption of communications involves the encryption of data before being transmitted via the Internet, it consists in transforming them into an indecipherable string of characters with the role of ensuring confidentiality during communication between the bank's system and the client's. (www.hyperledger.org)

Very large, huge data is organized in Data Warehouses (DW) with dimensional data modeling techniques. These dimensional data modeling techniques make it easier for end users to query business data. (www.hyperledger.org)

Dimensional data models are the data structures available to end users in the Extract, Transform, and Load (ETL) flow to query and analyze data. The Extract, Transform, and Load (ETL) process ends with loading the data into the target dimensional data models. Each dimensional data model is built with a data table surrounded by multiple dimension tables.

Listed below are the various advantages of dimensional data modeling.

- They are secured to use ever-changing DW environments.
- Huge data can be easily constructed using dimensional data models.
- Data in dimensional data models is easy to understand and analyze.
- They are quickly accessible by end users for high performance queries.
- Dimensional data models allow us to analyze (or) scroll data hierarchically.

ER modeling (entity–relationship model) is suitable for operational systems, while dimensional modeling is suitable for data warehouse. (www.hyperledger.org)

ER modeling maintains detailed current transactional data, while dimensional modeling maintains the summary of both current and historical transactional data. (www.hyperledger.org)

ER modeling has normalized data, while dimensional modeling has normalized data.

ER modeling uses more joins during query retrieval, while dimensional modeling uses fewer joins, so query performance is faster in dimensional modeling. (www.hyperledger.org)

4. Findings

4.1. Survey on the evolution of the use of financial instruments in the accounting of national entities

The research methodology used in this article consists of the empirical research of a data set available on the Internet.

The macro-financial environment continued to deteriorate in the second half of 2022 amid a global tightening of financial conditions, high levels of inflation and high commodity prices. Economic activity is expected to slow sharply in 2023, with recession risks rising. However, the latest data was more positive than expected by the forecast. (www.ziare.com)

Macroeconomic conditions were strongly affected by high inflation and commodity prices amid uncertainty related to the ongoing war in Ukraine and slowing activity in the US, Europe and China. In October, the International Monetary Fund (IMF) cut its global real gross domestic product (GDP) growth forecast for 2023 to 2.7% (–0.2 percentage points (pp) compared to the July forecast), and The European Commission has reduced its EU. it is estimated at 0.3% for 2023 (–1.2 percentage points compared to July). However, in January 2023 the IMF revised its GDP forecast up (+0.2 percentage points) to 2.9 percent as the global economy proved more resilient than expected in 2022 and inflation is expected to decrease. (www.ziare.com)

Global financial conditions tightened further, with corporate bond yields reaching their highest levels since 2009. The increase in yields for highly rated bonds was driven mainly by the risk-free rate, while for lower rated bonds, credit spreads also played an important role. role as investors left riskier assets (www.ziare.com).

Asset values remained relatively stable at the end of the reporting period compared to the end of June, with the exception of commodities which fell substantially. However, asset prices were volatile during the second half of 2022, highlighted by high peak to trough levels.

Commodity prices remained very high. While the composite commodity price index remained stable, there were substantial price fluctuations during the energy price period. Going forward, natural gas and electricity rose over the summer to peak in late August. Since then, energy prices have fallen as mild weather and output from other sources helped dampen demand, leading to 88% of EU storage at the end of December (compared to 53% in 2021). In contrast, agricultural and metal prices remained relatively stable (www.ziare.com).

High levels of uncertainty and fragile market liquidity limit the resilience of the financial system to external shocks. The recent stress on liability-led investment (LDI) strategies investing in sterling government bonds exemplifies how this risk can crystallize. A large shock to gilts has resulted in substantial liquidity pressure on leveraged LDI funds. Margin calls and repo collateral backed by government bonds (which have fallen in value due to a sharp rise in yields) and interest rate derivatives (IRDs) rose as higher yields triggered losses in market value. To increase liquidity, LDIs sought to sell sovereign bonds, but the market was unable to absorb the sales volumes, triggering the Bank of England's intervention to provide support to the sovereign bond market.

In general, global financial markets remain in a state of great uncertainty. The ongoing war in Ukraine and uncertainty over future monetary policy, combined with signs of a slowdown in economic activity in the US and China could weigh on financial markets, although recent more positive data on the macroeconomic outlook for 2023 may mitigate these risks. Geopolitical risks remain high globally and regionally (www.ziare.com).

The second half of 2022 was characterized by rapid movements in share prices and sustained levels of volatility. The downward pressure that started in early 2022 continued in Q3 2022 amid concerns about global growth, inflationary pressures and tight monetary policy (–5% in the US and –4% in Europe). However, the markets recovered in the 4th quarter, which was linked to the flow of corporate earnings news and the hope of reducing inflation, with the main indices scoring +15% (Euro Stoxx 50) and +8% (S&P 500) compared to September 30, 2022 (www.ziare.com).

By sector, with the exception of energy (+27% in 2022 vs. 2021), European equity valuations are still below 2021 levels, with real estate (–39%), retail (–31%) and energy, such as technology (–26%) and industry (–19%), which suffer the biggest declines. The real estate sector (RE) is going through the biggest losses on the secondary market since 2009 (www.ziare.com).

Inflationary pressures, weaker growth prospects and tighter monetary policy expectations continued to shape developments in fixed income markets in H2 2022. This translated into bond yield volatility and a deterioration in liquidity conditions (www.ziare.com)

The deterioration of the macroeconomic environment, together with the increase in input costs, has affected the profitability of European corporations, especially in the high-yield (HY) sector. In this respect, corporate bond markets have underperformed overall in 2022, with both the investment grade (IG) and HY bond indices down -14% and -12% respectively. However, HY valuations showed signs of a partial recovery in 2H2022 (+4% from June 30). Despite the decline in November, credit spreads across rating categories remained high, particularly for HY. This signals ongoing concerns about the sustainability of corporate debt in a weak economic environment and an increase in the cost of refinancing (www.ziare.com)

4.2. The observation of the accounting issues associated with financial instruments used in accounting

Financial assets and financial liabilities given real and cash flows are evaluated in the following alternatives presented below (Nicolae, 2010).

Fair value, or the amount for which an asset can be sold or a debt paid between knowledgeable parties, in a transaction carried out by the will of the parties, under objective conditions (Nicolae, 2010).

Mark-to-market (adjustments to the fair values of financial assets and liabilities): is a process by which the values of the most traded assets (for example, those held for trading and those available for sale) are adjusted to reflect current fair value. Such adjustments are often made daily and cumulative balances are resumed the following day before a new cumulative mark-to-market adjustment is recalculated. (Nicolae, 2010)

Amortized cost is the value at which the financial asset or liability is valued at the time of initial recognition (initial cost minus subsequent impairments). (Nicolae, 2010)

Hedge accounting symmetrically recognizes the offsetting effects on net profit or loss of the fair variation of the hedging instrument and the hedged item. Hedging relationships are of three types:

- fair value risk hedging is the risk of a recognized asset or liability is hedged (eg: the change in the fair value of bonds with a fixed interest rate as a result of the change in the market interest rate)
- hedging the risk of cash flows is the risk of cash flows regarding a recognized asset or liability is covered (eg: future interest payments related to a bond)
- covering the risk of a net investment in an external entity is the risk of exchange rate variation is covered. (Nicolae, 2010)

The gain or loss resulting from hedging must be recognized in net profit or loss or equity.

5. A case study of the accounting records for financial instruments

Table no. 1 Table of transactions related to the case study for financial instruments

Transactions	Textual description of the transactions
January 1, 2022	The Starx entity bought on 01.01.2023 a standardized package of call options on quoted shares, subscribed by the Fox2 entity as the seller. (Nicolae, 2010).
	The transaction is a hedging for the seller, where the hedged element is the market risk and the financial instrument designated for hedging is the options contract
	For the buyer, the transaction is only a speculation of the favorable price, whether he will decide to exercise or whether he will trade the option package as a security.
	The securities that constitute the underlying asset of the options are issued by a third company that does not intervene in this mechanism.
	The Starx company hopes that the market price of the shares in question will increase, while the Fox2 company hopes that the market price of the shares in question will decrease. Each predicts a gain by preserving the share price, but only one of the parties will win. So each hopes to transfer the market risk to the partner, in case of exercise of the option by the buyer.
	The premium representing the right to buy the option package price is 50,000 monetary units (mu).

	The exercise price is 1,550,000 mu.
	The value of the shares held (20,000 titles) by the company Fox2 is 1,500,000 mu with a nominal value of 75 mu.
	The stock price of the shares on the exercise date is 120 mu.

Source: Case study data proposed by the author

Note
Debit = D
Credit = C

Accounting data
(Making entries by the author)

The following operations take place in the buyer's accounting:

If he intends and decides to hold the options package until maturity, then he will record only the premium paid on the transaction date, following that at maturity he will exercise the purchase option (obviously if the price of the shares on the market will increase).

Table no. 2 Registration of recognition of the premium on the date of the transaction, the buyer of the options will recognize the paid premium of 50,000 mu in financial expenses

Account - D	Account - C	Amount
Financial expenses for listed shares	Available in currency on account	50,000

Source: Calculations and records made by the author

Table no. 3 On the exercise date, recognition of the options package as a security independent of the underlying asset, if the market price of the shares is favorable - higher than the contracted one - at the level of the exercise price of the call option

Account - D	Account - C	Amount
Shares financial instruments	Available in currency on account	1,550,000

Source: Calculations and records made by the author

The gain appears indirectly, as an economy compared to the value of the shares at the stock exchange rate and is not highlighted in accounting.

Table no. 4 If the standardized package of options is traded, as a security, then the premium paid = entry cost of this security, on the date of the transaction we have the registration

Account - D	Account - C	Amount
Other financial instruments	Available in currency on account	50,000

Source: Calculations and records made by the author

Table no. 5 At the moment when the value of the standardized option package has intrinsic value (market price higher than the premium of 50,000 mu), the buyer will decide to sell the short-term financial investment at the level of the stock exchange rate, which is composed for the company of the value of the premium (50,000 mu) and the difference up to the stock exchange rate (51000 mu):

Account- D	Account - C	Amount
Available in currency on account	Other financial instruments	50,000
Available in currency on account	Income from financial instruments	1,000

Source: Calculations and records made by the author

If the price of the shares on the market does not increase until maturity, the Starx company will not exercise the call option to purchase the underlying asset, recording only a financial loss caused by the procurement of the options contract of 50,000 mu.

The following operations take place in the seller's accounting:

Table no. 6 The recording of the premium of 1000 mu collected for the issuance of the options and for the company Fox2 to firmly commit to deliver the underlying securities at maturity, in case the buyer decides to exercise the call option, a delivery commitment is highlighted outside the financial position statement:

Account - D	Account - C	Amount
Available in currency on account	Other Income from financial instruments	50,000

Source: Calculations and records made by the author

Table no. 7. In the situation in which the company Starx decides to exercise the call option, then the seller is obliged to deliver the underlying securities at the predetermined exercise price and the corresponding collection of the difference:

Account- D	Account - C	Amount
Available in currency on account	Shares financial instruments	1,500,000
Available in currency on account	Income from trading financial instruments	1,500,000

Source: Calculations and records made by the author

Respecting the symmetry of the registrations made by the company Starx, the exercise means for the seller an indirect loss of 50,000 mu, equal to the unrealized gain, which is not shown in the accounting. It follows that the hedging operation initiated by the seller failed due to the evolution of the price of the underlying asset, contrary to expectations.

6. Conclusions

In my opinion, there are multiple elements that allow a positive forecast on the development of the accounting instrumentation of financial instruments.

Consideration should be given to developing and implementing a complex and flexible legislative, fiscal framework that allows and stimulates at the same time the concrete applicability of the various embodiments of financial instruments for financing economic activities. The provisions of the legal acts must be issued in a context adapted to the European legislation, simultaneously with the establishment of the concrete modalities of implementation, adapted to Romania.

There is a significant impact of the changes in the financial markets globally, which puts its mark on the expansion of the use of financial instruments in the current and future activities of economic entities in Romania. It is noted, in the conditions of a tightening of the possibilities of access to the financing resources for the Romanian companies, the need for a flexibility of the opportunities for application of the financial instruments.

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