

## Financial innovations on the currency market as new instruments to risk management

Ireneusz Miciuła  
*University of Szczecin*  
*Poland*  
*irekmic@wp.pl*

**Abstract.** The globalisation process has provided us with the possibility of exchange and competition growth, and thus, has brought about the issue of economic (business) creation in the context of the new foreign exchange risk mitigation instruments. The author presents the division and percentage proportion of innovative risk management instruments used in practice in the Polish economic reality, and compares it to foreign markets (the USA and Germany). Moreover, an attempt is made to define what financial innovations are and analyse the available alternatives and instruments provided by the currency market and used to manage a company on the global market. Finally, chances and threats presented by financial innovations are also demonstrated.

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### INTRODUCTION

A market is a set of planned and implemented purchase/sale transactions and the conditions which govern how they are offered and carried out. In other words, a market is an ongoing economic process. As a part of this process, a buyer and a seller decide what they want to sell or buy and under what conditions (Czekaj 2008, p. 3). From the perspective of the object of trade, one can distinguish four basic market types: product (goods and services) market, property market, labour market and financial market. Financial markets are those where purchase/sale transactions of various forms of money capital are conducted on the basis of financial instruments. A financial instrument is a contract concluded between two parties defining the financial interdependence which they remain in (Jajuga 2009, p.7).

The objects of trade on financial markets are financial instruments, i.e. financial assets (claims) that some economic entities have towards other. The modern financial markets can be divided into money, capital, currency (foreign exchange) and derivatives market. The currency market comprises of all the currency exchange transactions, i.e. purchase/sale transactions of one currency for another (Bennet 2000, p. 49). The object of every currency transaction (whether it is currency sale or purchase) includes at least two currencies. A conversion rate (exchange rate) is created on this market. It defines the value of one currency in terms of another currency. The rules of currency market functioning are identical to those governing any other market (e.g. commodity market). What is traded here are currencies, or in other words, financial instru-

ments whose underlying assets are currencies. A currency is a valid legal tender in a given country (<http://inwestycje.elfin.pl>, access date: 20.04.2014).

Table 1

Currency market definition

No.	Author	Definition
1.	Rapacki R.	It is an international market where one domestic currency can be exchanged for another.
2.	Begg D.	It is an international market where currency flows between countries take place. The price in which currencies are exchanged is called the exchange rate (currency rate).
3.	Czekaj J.	It is a market where one can exchange the currency of one country for the currency of another country. Currency is another name for money (we talk about domestic currency and foreign currency).
4.	Kudła J.	It refers to transactions in foreign currencies with the highest level of liquidity, which can include instruments belonging to each of the three markets enumerated above.
5.	Miciuła I.	It is an international market of currency and financial instrument trade where currencies are the underlying assets.

Source: the author's own study on the basis of: D. Begg, *Macroeconomics*, Polish Economic Publishing House, Warsaw 1992, p. 272; R. Rapacki (ed.), *Economics vol. 2*, Polish Economic Publishing House, Warsaw 1995, p. 291; J. Czekaj (ed.), *Markets, Instruments and Financial Institutions*, Polish Scientific Publishers, Warsaw 2008, p. 13; J. Kudła, *Financial Instruments and Their Applications*, Key Text Publishing House, Warsaw 2009, p. 18.

Summarising, a currency market comprises purchase/sale transactions of currencies and financial instruments valued in a currency different from the domestic currency (Bilski 2006, p. 74). The aim of this market's functioning is making free flow of funds possible between countries which have different currencies, and defining one country's currency value in terms of another country's currency value. The currency market plays a number of crucial roles in economy:

- it allows to compare prices of goods, services and financial instruments on the international scale,
- it contributes to foreign trade development,
- it allows for transferring the purchase power between a given country and countries abroad,
- it enables to connect the domestic and international financial markets,
- it enables monetary authorities to pursue exchange rate and monetary policies.

Currency market is used to conclude various transactions. In literature, different criteria of currency transactions division can be found. For example, depending on the reason for a given operation, one can distinguish investment, speculative, arbitrage and hedging transactions.

However, the classic division used to systemise currency operations is based on the transaction conclusion deadline. Two basic groups of operations can be distinguished here:

Current market or spot market: characterised by establishing the currency exchange rate instantly, where the transaction settlement and the provision of currency takes place within two working days.

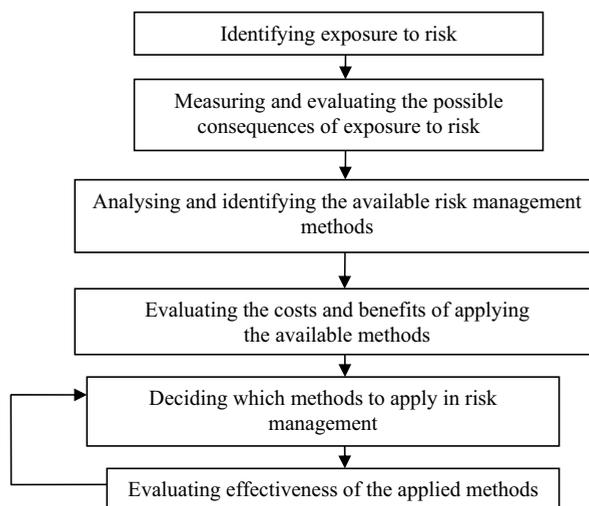
Forward market: pertains to the operations whose settlement period is longer than two working days.

Such a division is also used in research conducted by the Bank of International Settlements (BIS).

## DIVISION OF METHODS USED BY POLISH COMPANIES IN CURRENCY RISK MANAGEMENT

The notion of risk management involves policies related to risk in an enterprise and encompasses not only insurable risk, understood as a risk of losing something, but also opportunities to gain profit from the company's activities. The main goal of risk management is, firstly, improving the company's financial results and, secondly, providing such conditions which would allow the company not to incur more losses than expected. In practice, the goal is to minimise the risk as much as possible and secure oneself against its consequences as best as possible. Risk management refers to recognising the type of risk a company can be dealing with, as well as measuring and controlling it with all methods available. Risk management can thus be defined as a logically arranged set of rules and regulations, which are followed all the time and without any exceptions in the whole company's activities (Lech 2003, p. 72).

Nowadays, currency risk management in international trade seems to be indispensable. A higher level of economic insecurity caused by the present crisis has changed the way financial markets function. When the volatility of exchange rates and raw material prices on commodity markets increased, enterprises discovered that their value is influenced not only by the risk characteristic of a given business activity type, but also by the risk of price changes on financial markets.



**Figure 1. Risk management process**

Source: the author's own study on the basis of: Lech A., *Risk Management - Key to Stability*, WIB Publishing House, Warsaw 2003.

Risk management process includes identifying risk, as well as measuring and controlling it with instruments available. Only analysing and familiarising oneself with the available risk management instruments allows for building the company strategy and assessing its effectiveness, as presented in Figure 1. Gaining in-depth knowledge of the nature and range of the potential risk makes it possible to timely choose preventive actions that would minimise the impact and consequences of this risk. It might be said that risk is inherent

to currency transactions. Thus, it has to be limited with proper management, which leads to the optimal use of a company's resources and potential.

Nowadays, currency risk management seems to be indispensable, even though there is a possibility to forecast currency exchange rate fluctuations in a company in order to benefit from positive changes. However, such forecasting is very complex so it is possible only in large companies where specialists are employed to do this task. Even so, such activities are still highly risky whereas the fundamental aim of currency risk management is stabilising the value of the future cash flows in foreign currencies at the currently known, defined and acceptable level. Two approaches to risk management can be distinguished:

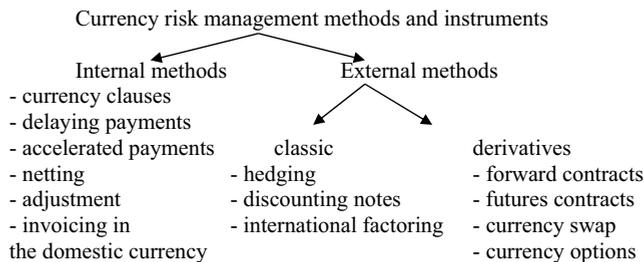
- Conservative approach: hedging the currency position to the full extent so that the currency exchange rate fluctuations did not cause a change in cash flow values. This way, one can establish already today the value of future transactions in the domestic currency.
- Active approach: in this case, one consciously decides to leave the currency exposure, partially or completely, while waiting for beneficial exchange rate changes. Hedging (complete or not) of a position can take place when we decide that the exchange rate is profitable for us.

Management effectiveness as a company competitiveness factor pertains to all economic processes in the modern knowledge-based economy. This is caused by a large amount of information, often contradictory, about economic processes and decisions. In the modern economy, competitiveness is becoming one of the most important indicators when evaluating how well an enterprise functions on the market.

The Polish financial market is developing dynamically, but it still lags behind some better developed financial markets in the world. Nevertheless, it offers a larger and larger choice of hedging instruments. Some of those instruments have been available for a very short time (e.g. exotic options) so the possibility to assess their effectiveness is very limited. There are two main groups of hedging instruments:

- internal instruments (the so-called natural hedging),
- external instruments.

Both of those groups include many instruments that allow for effective currency risk management.



**Figure 2. Classification of currency risk management methods and instruments**

Source: the author's own study on the basis of: Kudła J., *Financial Instruments and Their Applications*, Key Text Publishing House, Warsaw, 2009.

Application of some of the mentioned hedging instruments may be hindered or impossible in some enterprises. For example, it will be difficult to impose our national currency as the settlement currency if we are a small company and negotiate a contract with a large international enterprise, which of course does not mean that we should not try to negotiate such terms. Another restriction is one-directionality of currency flows. If a company only exports or only imports, it cannot use the option of netting incomes and expenses

in the same currency in order to limit the exposure to currency risk. In such a case, what remains is linking a few smaller transactions into one larger transaction in order to negotiate better hedging conditions. On the other hand, an attempt to delay payments to enterprises outside the corporate group can be detrimental to a company's image. Despite those restrictions, the first step in currency risk management should be to use the opportunities provided by internal hedging to the greatest possible extent (Miciuła 2012, p. 76). Only later should we try external hedging, especially the hedging from the forward market.

In the case of external hedging, there are basically no restrictions of applying given instruments by enterprises, which is the case with natural hedging. The only restrictions may be minimal values of the hedged positions required by the institutions that offer those instruments (mainly banks). External hedging should hedge those expositions which are left despite the application of internal hedging. Using external hedging involves the necessity to bear costs of one out of two groups: direct costs, e.g. bonus costs in the case of purchasing currency options, or indirect costs (opportunity costs), e.g. a margin deposit when currency contracts are purchased. Nevertheless, the application of external instruments allows for building whole hedging strategies, which allows for adjusting the hedging to the company's requirements.

Hedging with the use of derivative instruments consists in concluding a transaction that provides security against losses related to disadvantageous exchange rate change in the future. The name "derivative instruments" encompasses numerous instruments which have one feature in common: their value depends, directly or not, on the value of the so-called underlying instruments, for example, shares, stock indices, currencies or bulk goods. Derivative instruments can be divided depending on how complicated their structure is. Therefore, we distinguish:

- vanilla derivatives: simple construction, standard instruments,
- exotic derivatives: complex construction, non-standard instruments.

The differences between derivatives also stem from how risk is distributed between the parties. Instruments with symmetrical risk are those where both the issuer and the buyer of a given instrument take the full risk. In this case, one party's profit equals the other party's loss (Crawford, Sen 1998, p. 92). Instruments with asymmetrical risk are those where the issuer is unconditionally obliged to fulfil the subject matter of the contract and the buyer has the right to perform the contract. If a situation becomes disadvantageous for the buyer, they can withdraw from the contract. One of the most popular instruments is forward sale and purchase of currencies, i.e. a currency contract.

Table 2

Average daily net turnover on the domestic currency market in April 2013 (USD million)

Currency exchange transactions	Spots	Forwards	Interest rate	Swaps	Currency options	Currency market (total)
Value	2324	464	125	4 581	70	7567

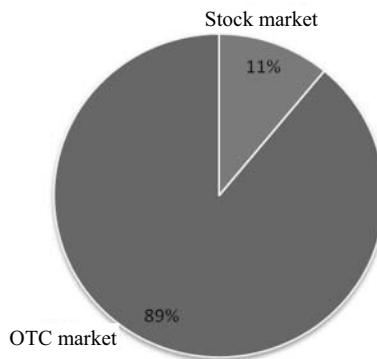
Source: The National Bank of Poland ([www.nbp.pl](http://www.nbp.pl)), Results of Research on the Currency Market Turnover, September 2013.

Average daily net turnover on the domestic currency market has stabilised at the level of USD 7.5 million (a similar result was achieved in 2010). Activity on the spot market has increased due to the development of electronic transaction platforms dedicated to enterprises and individual clients. Foreign companies are most active in the currency swap segment, which indicates that non-residents conducting activities in

Poland feel a natural need to use the Polish currency for settlements. The only segments where most of the turnover share has been generated by domestic enterprises are forwards used in the operations aimed at securing an entity against currency risk.

### QUANTITATIVE STRUCTURE OF CURRENCY RISK MANAGEMENT METHODS USED BY POLISH ENTERPRISES

Derivative instruments are trade objects on the stock market and OTC market. Turnover on the OTC market is many times larger than the turnover on the regulated market, as demonstrated in Figure 3.



**Figure 3. Global percentage share of stock and OTC markets in the concluded derivative instrument transactions (January 2011)**

Source: BIS Quarterly Review, p. A104, June 2011.

In Table 3, the average daily net turnover on the Polish derivatives market is presented, including the division into stock and OTC markets. Similarly to global markets, in Poland the OTC market is significantly larger. Although risk is limited on the stock market, OTC market instruments are cheaper and more adjusted to the buyers' needs. Doubtlessly, an interesting phenomenon is that since 2008 the popularity of the stock market, i.e. standardised instruments with limited risk, has been rapidly growing, which has surely been caused by the economic crisis and the need to conduct business activities in more stable financial conditions (Milewski 2012, p. 141).

Table 3

Average daily net turnover on the Polish currency derivatives market (USD million)

Year	2005	2006	2007	2008	2009	2010
OTC market	1518.7	1847.5	2932	3443.6	1958.2	2635.7
Stock market	0.8	0.4	0.7	14.4	23.4	28.9

Source: Development of the Financial System in Poland in 2010, National Bank of Poland, 2012.

The data included in the table confirm that the Polish derivatives market is young (in 2013 it celebrated its 15th anniversary, but it has to be taken into account that in the first three years, the market was only budding) and in comparison to the largest global markets, it has a small turnover. However, the only reason to compare it to the largest derivatives markets can be locating the Polish market in the world. What needs to be done is a comparison of the market in Poland with those countries which have had similar functioning and development conditions. Only then will it be possible to establish whether the activities undertaken in Poland and the development of derivatives in the country have been correct. And in this area, Poland performs very well in comparison to others. This stems from the fact that in terms of the derivatives market development, as reflected by the value of the concluded transactions, Poland comes before such countries as Italy, Spain or Norway. Therefore, the development of this market in Poland should be perceived positively, even though, together with the above-mentioned countries, the Polish market belongs to the developing ones, as does the whole Polish economy.

This is also confirmed by the popularity analysis concerning derivatives used on the Polish market. In Table 4, there is a comparison made on the basis of studies where Polish, German and American enterprises had to mark the currency risk hedging instruments they use.

Table 4

Percentage proportion of derivatives used on the Polish, German and American markets, data from 2010

Market	Forward	Futures	Swap	Currency options	OTC options
Polish	48%	3%	28%	2%	18%
German	89%	7%	27%	4%	32%
USA	79%	28%	46%	17%	52%

Source: the author's own study on the basis of: Derivatives in Wallets of Non-Financial Enterprises – study report, the Polish Central Statistical Office, Warsaw, July 2010.; G.M. Bodnar, G. Gebhardt “Derivatives Usage in Risk Management by German Non-Financial Firms”, 2010.; NBER Working Paper, Cambridge, 2010.

The most popular instruments on the Polish market are forward contracts and currency swaps. The popularity of currency swaps results from the fact that they are used by the foreign companies investing in Poland. On the American and German markets, swaps are losing their popularity to currency options traded on the OTC market. Additionally, the table shows that the stock market has undoubtedly grown the most in the USA. The general data reflect global trends and, thus, the state of derivatives market development.

## FINANCIAL INNOVATIONS ON THE CURRENCY MARKET AS NEW GROUPS OF INSTRUMENTS

Financial innovations are a phenomenon that naturally accompanies financial system development. Their dynamic development that has been taking place for more than two decades has generated interest in this subject, especially due to many ambiguities and diverse opinions as to the role and significance of those innovations. In the financial sector, innovations can be defined as a new idea for a successful linking of two existing elements into new configurations (<http://www.bankier.pl>, access: 25.03.2014). One of the features characterising financial innovations is creating and testing them on the local market and subsequently, if

they are effective, introducing them to the international market. This is possible owing to the development of international corporations (globalisation).

As a result of the current development of innovation as a notion and the diversity of its meanings in many scientific areas, there appear problems with defining and systemising this phenomenon. Innovations are often perceived in a narrow manner, which emphasises their product character. But financial innovations often create a varied group of phenomena, processes and financial instruments, whose number and diversity is systematically growing (Crawford, Sen 1998, p. 128). Thus, there are significant differences in the ways financial innovations are interpreted and defined.

Table 5

Definitions of innovations in the form of financial instruments

No.	Definition
1	Financial innovation is an instrument where “fossilised” elements of conventional financial market products (bonds or shares) have been substituted by new and flexible elements, owing to which these products gain new applications and high liquidity on the capital or currency markets.
2	Financial innovation is a combination of a larger number of instruments (including the classical ones), which allows for the use of comparative advantages
3	Financial innovation is an instrument which erases the differences between financial market segments.
4	Financial innovation is an instrument whose role is to protect from the volatility of the basic financial market parameters, such as interest rates or currency exchange rates. It takes the form of hedging contracts, either standardised (e.g. futures) or non-standardised (e.g. options on OTC).

Source: Anderloni L., Llewellyn D.T., Schmidt R.H. (ed.), *Financial Innovation in Retail and Corporate Banking*, Edward Elgar, Cheltenham 2009, p. 42; Gubler Z.J., *The Financial Innovation Process: Theory and Application*, “Delaware Journal of Corporate Law”, vol. 36, 2011. 36, p. 62 Stradomski M., *Financial Innovations in Creating Enterprise Value*, Poznań University of Economics, Poznań, 2006, p. 25.

Long-term financial market transformations are somewhat two-dimensional: they may be in depth and in width. Development in width consists in a growth of financial market size (volume), so it has a quantitative nature (the number of transactions with given instruments is growing), whereas the in depth development refers to qualitative changes on the financial market reflected in the development of new instruments which open subgroups of new market transactions. On the currency market, one can find derivatives and remodelled products. Derivatives become independent financial instruments which have separated from their sources: the basic products and markets. Their inventors use a simple line of thinking assuming that the elements of a basic product, e.g. a straight bond (interest rate, validity period, currency) are not permanent and according to the rule of building blocks, they can be combined in various ways (Grysa 1999, p. 58).

Globalisation process and the changes that it generates in management and competition have brought about the necessity to change the approach to company management. Hence, it is expected of enterprises, as main entities in the market economy, to effectively manage their activities. In order for a company to survive on the market, it has to manage all the risks connected to its economic activities, which directly translates into financial effects and future development opportunities. The ongoing financial market globalisation process makes the markets function almost as if they were one. However, in this seemingly uniform financial market structure one can observe an integration process accompanied by a growth in diversity of this market's instruments and the appearance of numerous market niches. The literature on the subject often states that the very instruments which fill market niches are innovative financial instruments. Financial market

globalisation has decreased the regulatory effectiveness of central banks, especially on currency markets since the intervention range is becoming too small in comparison to the dynamically growing turnover on those markets (daily turnover reaches 2 trillion dollars). We distinguish five groups of financial instruments, displaying the position of derivatives in this typology.

Table 6

## Groups of financial instruments

Group	Instrument type
One	includes basic instruments, often described as simple financial market products (shares, bonds, foreign currency, indices). They are usually introduced directly to the market by issuers and their legal nature is based on the liability that these issuers incur.
Two	includes combinations of traditional instruments and derivatives (hybrid instruments), where there often appears a conflict as to which elements of this combination leave a greater mark on the financial entitlement created this way. Such an instrument are, for example, convertible bonds. They are a hybrid of a traditional share and a traditional bond, but they can also be perceived as a hybrid of a traditional bond and an option, understood as the right to change this bond into a share.
Three	encompasses traditional derivatives. These are: 1) forwards and futures, 2) options, 3) swaps, 4) interest rate agreements.
Four	includes derivatives from derivatives. This group of products also encompasses options for futures or swaps.
Five	involves compound options (option combinations), including all the option strategies adjusted to the individual needs of financial market participants.

Source: Gubler Z.J., *The Financial Innovation Process: Theory and Application*,  
"Delaware Journal of Corporate Law" 2011, vol. 36.

In this classification, financial innovations appear in all the groups starting from the second one, which demonstrates their number and diversity. The main role of derivatives is to enable entities to manage risk effectively. Such management is beneficial in terms of costs and allows for high flexibility. Creating hedging procedures against price changes has become the primary reason for foreign exchange forward transactions. Simultaneously, for some participants, the main reason is speculation (trading). These few different, often interconnected, driving forces have enabled us to observe this dynamic development of financial innovations.

Financiers can create new assets from traditional instruments and derivatives, based solely on some parts of those instruments (previously taken into pieces with financial engineering). Financial engineering is the ability to design, construct and implement financial innovations in modern finance management, which makes it possible to find the optimal business financing method and manage risk effectively. Such engineering is supported with advanced methods of derivative pricing and risk modelling, as well as modern information technologies. Owing to derivatives, it is possible to separate a single risk from other features of the underlying asset, and thus, establish separately the price of this specific risk form. As a result of such activities, trading with derivatives will mean that only one, separate risk form will be transferred between the parties to the contract.

According to American specialists, there are more than 1200 different types of derivatives on the market at the moment. They make it easier for banks, companies and investors to manage risk and the benefits that they bring exceed the dangers (Frame, White 2010, p. 4). They are usually quite flexible and available in an

unlimited number of combinations, which allows for creating a product adjusted to the needs of individual clients. It is particularly important for a derivative to be constructed in such a way as to guarantee the best adjustment to the individual company risk profile. When analysing opportunities and dangers of financial innovations, it should be noticed that the economic practice proves that business activities require some inclination towards risk. Owing to product and operations innovations, financial market is becoming the pillar of entrepreneurship since it does not only protect from undue risk, but also provides the company with more freedom to “manoeuvre” in the world of finance. Of course, some threats may also be encountered here. The modern environment for financial market activities is very complex in terms of information, which makes the effectiveness of controlling these activities limited. However, it is derivatives that may play a positive role in making financial markets more “transparent”. Derivatives can connect the divided partial markets by promoting arbitrage strategies and influencing prices on the forward market. It may be stated that the derivatives market introduces some order in the financial system (the functioning of forward markets can create a foundation for forecasting e.g. exchange rates).

As with many debatable issues, the truth lies somewhere in the middle. Therefore, although there exist the opportunities mentioned above, one also has to notice some dangers of financial innovations. Most importantly, such innovations can become transmission channels of crises and facilitate their expansion. Thus, legal regulations should always be followed in business activities and the criminal liability of market participants should be consistently enforced. Moreover, those financial innovations which are supposed to make the use of opportunities more effective and protect us from threats present in our business environment should be used very consciously. This pertains to the rules of their construction and mechanisms, as well as the ability to recognise potential consequences of their use, both the positive and the negative ones. Financial innovations which support financial system work and development, provide its participants with more opportunities and promote economic growth and social prosperity, are referred to as sustainable or appropriate innovations. This name has been introduced to differentiate such innovations from harmful innovations which can improve the situation of individual entities in a short-term perspective, but their long-term consequences are perceived negatively from the viewpoint of the whole financial system.

## CONCLUSION

Traditionally, it is assumed that the economic policy leading to economic openness is the driving force behind innovation and productivity growth (Ostapowicz 2013, p. 16). However, the ongoing globalisation, liberalisation and pursuit of competitiveness are also perceived as factors which threaten the process of achieving prosperity. This is supported by the fact that some social groups are becoming poorer and poorer in knowledge and service-based economies. Globalisation and the processes that accompany it, influenced by, for example, international organisations and corporations, yield various benefits to some and bring about losses or other dangers to others. Hence, if a company wants to survive and stay on the market in this new global economic reality, it needs to be able to effectively manage its resources and adjust to its constantly changing environment. Currency risk is an integral element of international business activity. The fact that financial innovations are so useful on the currency market has resulted in these innovations becoming a permanent element necessary in companies' activities. In the recent years, the range of available services has increased, which has led to the development of instruments that hedge currency risk. This creates opportunities to develop and refine strategies of counteracting currency risk. It allows for using appropriate hedging, which is doubtlessly the precondition of a company's safe financial development when currency exchange is necessary. This causes the desire and the possibility of trading activities, which translates into a kind of

economic creation, resulting in an increase of trade turnover, which without adequate currency risk management instruments would not be possible. The reality is changing, so risk management cannot be defined by a set of specific rules of conduct optimal for every situation. This is why it is so important for an analyst to monitor the risk management process using his or her knowledge, intuition and experience.

By analysing opportunities and dangers, it can be stated that the financial market is the crucial reason for stabilising the economy and its effective functioning. Owing to the financial market, basic decision parameters, for example, interest rates, currency exchange rates and securities prices, are developed and constantly verified. Additionally, the financial market has become the pillar of entrepreneurship by creating various financing forms for the enterprises that search for capital and possibilities to overcome temporary fluctuations in production. In such a case, a lack of a financial market always causes destimulation in implementing innovations and entrepreneurs' low inclination towards risk. However, a well-organised and well-functioning financial market allows every national economic system to open itself to the world and benefit from widely-understood innovations and economic and social exchange, which positively influences economic creation.

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