

# CURRENCY RISK EXPOSURE AND ITS DETERMINANTS: THEORETICAL AND EMPIRICAL RESEARCH

---

1 Nermina Pobrić, University of East Sarajevo, Faculty of Economics Brčko

\* Corresponding author E - mail: nermina.pobric.efb@gmail.com

1 ORCID ID: 0000-0003-3651-3783

---

## ARTICLE INFO

Preliminary communication  
Submitted: 15.11.2018  
Revised: 16.05.2019  
Accepted: 22.05.2019  
doi 10.7251/ACE1730117P  
UDC 005.334:336.71

### Keywords:

*foreign exchange rates,  
currency risk exposure,  
currency risk exposure and  
its determinants, company  
characteristics, ambient  
factors*

JEL Classification: F23, F31,  
G32.

---

## ABSTRACT

The study investigates the currency risk exposure of companies. The author presents relevant theoretical knowledge and the results of empirical research of the currency risk exposure of companies and its determinants. Theoretical viewpoints on the impact of company characteristics and ambient factors on the currency risk exposure of companies are consistent. In empirical research, theoretical attitudes about the impact of ambient factors on the currency risk exposure of companies have been confirmed, whereas theoretical attitudes on the impact of company characteristics have not been confirmed or not confirmed in a sufficient number of empirical studies. Based on the obtained results of empirical research, it is not possible to conclude with certainty which characteristics of the company affect the currency risk exposure of companies

© 2019 ACE. All rights reserved

---

## INTRODUCTION

Multinational companies realize a significant part of their business activities in different countries (selling goods in foreign markets, borrowing from foreign markets, operating in branches established in different countries, etc.). Since virtually no business activity can start and end at the same time, within a time interval from the beginning to the end of the business activity multinational companies are exposed to the risk of change in the currency value of those they operate in. However, the variability in the exchange rate does not affect only companies operating in international markets, but also domestic companies whose competitors import goods from abroad, as well as fully domestic companies. Therefore, even domestic companies that operate in the local market are affected by fluctuations in foreign exchange rates.

In the theory of international financial management the sensitivity of the company's value to unexpected changes in the foreign exchange rate is called the currency risk exposure. Any unexpected depreciation (appreciation) of the national currency will cause the gain of the export companies, and the loss of the import companies (loss of the export companies, and the gain of the import companies). Change in the exchange rate, conditioned by reducing the gain or increasing the loss, the decrease in the value of the company is the manifestation of its currency exposure, that is, the negative consequence of exposure to fluctuations in the foreign exchange rate.

Different authors define differently the currency risk exposure. Thus, for example, "Levi defines exposure as the sensitivity of the real value of investments or liabilities denominated in local currency to exchange rate changes. [...] Jorion defines currency risk exposure as the sensitivity of the company's value to unexpected exchange rate changes, which is measured by the coefficient of the slope of the regression line derived from the regression model in which changes in the company's value are regressed against the changes in the exchange rate. Moosa defines the level of currency risk exposure as the degree of sensitivity of what is exposed to risk to the source of risk. In other words, the level of exposure is the degree of sensitivity in the domestic currency of the stated values of positions, such as investments, liabilities and cash flows denominated in foreign currency to the change in the foreign exchange rate. The source of the currency risk is the change in the foreign exchange rate." (Bash, 2016, p. 34)

The misunderstanding of the difference between the concepts of currency risk and currency risk exposure and the use of one with the meaning of the other term is very widespread. Knowing the difference between these terms is very important in international financial management. While currency risk exposure is the sensitivity of a company's value, investments, liabilities or cash flows to unexpected changes in foreign exchange rates, currency risk can be defined as the risk of an unexpected change in the foreign exchange rate on a particular day in the future or, alternatively, as the risk of an unexpected change in the value of investments expressed in the domestic currency, liabilities or cash flows caused by an unexpected change in the foreign exchange rate.

In the last quarter of the 20th century, the complexity of currency risk exposure has increased for several reasons. Namely, all developed countries and many other countries have established the fluctuating exchange rate regimes that imply dynamic and continuous currency movements. Then, during the 1980s and 1990s, most of the economies opened economically, leading to the increased competition on the market. Also, in the same period, the Internet and communi-

cation technologies developed rapidly and enabled easier and faster connection of all parts of the world (according to: Bhaskaran & Priyan, 2015, p. 13).

In the finance theory, currency risk exposure is considered to affect the value of the company through its cash flows generated in foreign currency, such as: cash flows arising from export-import transactions, cash flows arising from foreign currency borrowing, cash flows arising from the allocation of funds from foreign affiliates and cash flows arising from portfolio investments. On the other hand, the influence of the company's exposure to unexpected fluctuations in the exchange rate can be very complex and reflect on the volume and amount of sales revenue, the level of production costs, market share and the company's competitive position. The economic theory suggests that the cash flows from the company's business activities and the discount rate used to determine the value of a company are affected by unexpected fluctuations in the exchange rate. Unexpected fluctuations in the exchange rate also reduce gains from cross-border business activities, the value of investments expressed in the domestic currency and liabilities denominated in foreign currency.

Indisputably serious effects of the company's currency risk exposure put before financial managers the request for a better understanding of the nature, determinants and possibilities of measuring and managing exposure. Due to the limited scope of work, the subject of our consideration is only the determinants of the company's currency risk exposure. The author's intention is to present relevant theoretical knowledge and results of empirical research of determinants of the company's currency risk exposure.

The work consists of three parts. In the first part of the paper, the types of currency risk exposure will be presented in order to make it easier for readers to understand the rest of the text. Theoretical stances and empirical evidence by various researchers in their empirical research on the impact of the company characteristics on its currency risk exposure will be presented in the second part of the paper. In the third part of the paper, the influence of ambient factors on the company's currency risk exposure will be considered, also through the presentation of theoretical stances and empirical evidence by various researchers in their empirical research.

## **1. TYPES OF THE CURRENCY RISK EXPOSURE**

In the field of international financial management, the literature in which empirical research on the sensitivity of a company's value to changes in the foreign exchange rate has developed rapidly since the 1990s. In the first studies that

examined the currency risk exposure of companies, such as the Jorion study in 1990, Bodnar and Gentry study in 1993 and Bartov and Bodnare study in 1994, currency risk exposure was measured for companies in developed countries, and it was defined as the elasticity of dividend yield on the change in the foreign exchange rate. In these studies, the authors came to the conclusion that the fluctuations in the exchange rate influenced only a few companies. In their study in 1995, Choi and Prasad proved that foreign exchange rate fluctuations affect the value and cash flows of the company through transaction, translation and economic risks (according to: Erdogan, 2016, p. 45). Although in the finance theory, currency risk exposures are grouped into different categories, there is a generally accepted view that the above exposures, i.e. transaction, economic and translation exposure, are three basic types of currency risk exposure.

Transaction exposure to currency risk arises when a company needs to convert into the domestic currency the position of receivables and/or liabilities which are already in the foreign currency of the balance sheet and when it has contracted a transaction that will in the future generate cash flows in a foreign currency that will need to be converted into a domestic currency. This is the sensitivity of the company's future cash flows from contracted foreign currency denominated transactions to exchange rate changes. In other words, transaction exposure to currency risk arises from the impact of the exchange rate changes on the amount of future cash flows whose nominal value is known. Financial receivables and liabilities are the types of balance sheet items that are most exposed to transaction risk. The index of transaction exposure is, therefore, most commonly a measure of the change in the value of outstanding financial liabilities and unpaid financial receivables denominated in foreign currency when changing the exchange rate for one unit. The requirement that cash flows arise from the contracted transactions and that their nominal value is known is what managing transaction exposure makes simpler than managing other types of currency risk exposure. However, simplicity is not the only criterion when deciding whether to manage exposure. Decision making also involves estimating the costs and benefits of managing exposure. Many companies are still considering the option of leaving exposed balance positions unprotected when the real level is below the level for a particular company of tolerant risk or when the expected exchange rate fluctuation is low enough.

Economic exposure to the currency risk is, by some characteristics, similar to transactional exposure, but it differs in some of its characteristics. The similarity is reflected in the fact that both exposures imply the sensitivity of future cash flows to unexpected changes in the exchange rate, and the difference in the fact that transactional exposure implies, and economic exposure does not imply, that cash flows arise from contracted transactions. Economic exposure

implies the sensitivity of the company's competitive position to the exchange rate fluctuations. Therefore, it arises when there is a possibility of changing the company's competitive position on the market and, consequently, the present value of the expected future cash flows of the company owing to the unexpected change in foreign exchange rates. "Compared with other types of exposure, economic exposure is most difficult to manage because it requires a professional and objective review of the business process, location and currency in which the company operates, and then aggregating all the results into adequate measures. Many multinational companies can not "deal" with the complexity of measuring and managing economic exposure. Recognizing and identifying this risk are the simplest activities in the exposure management process. Reducing exposure requires appropriate technology, talent and efficiency." (Antoci, 2015, p. 6) Economic exposure affects the profitability of a company's business over a longer period more than the transactional and translational exposure to currency risk do. Other terms are used to indicate this exposure in the literature: operational exposure, competitive exposure, strategic exposure and non-monetary exposure.

Transactional exposure to currency risk is manifested through the impact of changes in the foreign exchange rate on the company's consolidated financial statements. It represents the sensitivity of financial statements denominated in foreign currency to changes in the foreign exchange rate. Translational exposure arises when converting the financial statements of foreign affiliates of a multinational company into the currency of the country of origin of the parent company or when converting the financial statements of companies members of the holding company into the reporting currency for the purpose of compiling the consolidated financial statements. The values in the preferred currency of the converted positions will vary depending on the exchange rate applied in the conversion of the financial statements. Due to fluctuations in the exchange rate, the unchanged value of the position before the conversion will be different from the period to the period after the conversion. Translational exposure is also referred to in the literature as accounting exposure.

"Belk and Edelshain in their study the British Times 1000 Corporations in 1997 showed that three exposures are interconnected. They proved that economic exposure will be converted into transactional exposures in the future and that the choice of currency in which the company will generate cash flows in the future will affect the level of income and expenses in the income statement (translational exposure). Therefore, anything that affects economic exposure will definitely affect the other two exposures. In his study in 2000, Marshall stressed that these three exposures are interdependent, not separate, so the company can be exposed to more than one risk at the same time." (Bash, 2016, p. 34)

Multinational companies pay more attention to measuring and managing transactional risk than other types of exposure to currency risk. There are more explanations for this. Firstly, transactional exposure is easier to measure and manage than economic and translational exposure. Secondly, since managers prefer to deal with short-term exposure, it is understandable that their focus is on transactional exposure that affects the profitability of a company's business in a short period of time. Thirdly, the effect of transactional exposure to currency risk on the profitability and cash flows of the company is considered to be the most significant. This largely explains the manager's focus on measuring and managing transactional exposure to currency risk.

## **2. THE IMPACT OF THE COMPANY CHARACTERISTICS ON ITS CURRENCY RISK EXPOSURE**

In financial theory, the influence of different company characteristics on its exposure to currency risk is examined and tested in empirical studies, such as: size, export activity, foreign investments, liquidity, asset management efficiency, profitability, level of leverage, hedging and integration with other companies. The size of the company is an important determinant, but it does not directly affect its exposure to currency risk. The influence of the size of a company on exposure to currency risk is realized through the internationalization of its business. Usually, larger companies are more internationally oriented than smaller companies. In large multinational companies, business activity has a dominant international character. Such character of business activity, when a company does not carry out hedging, increases its exposure to currency risk. The lack of interest of multinational companies to implement hedging is due to the fact that their relative costs of financial troubles are low. From this it follows that the size of a company and the degree of its exposure to currency risk, in theory, are directly proportional.

Two other important determinants of the company's exposure to currency risk are its export activity and foreign investments. Given that export earnings and foreign investment income, generally denominated in foreign currency, unexpected fluctuations in foreign exchange rates may lead to an increase in the company's exposure to currency risk. Thus, the growth in the volume of export activities and foreign investments increases the company's exposure to currency risk. In other words, the indicators of export activity and foreign investment, on the one hand, and the degree of exposure of the company to currency risk, on the other hand, are directly proportional.

The company can maintain a high level of liquidity and, consequently, reduce the possibility of financial disturbances by reducing dividend payments or hav-

ing more liquid assets. With a higher degree of liquidity, among other things, the company can eliminate or mitigate the effects of its exposure to currency risk. Thus, the degree of liquidity and the company's exposure to currency risk are indirectly proportionate.

With more efficient asset management, companies increase their resilience to changes in prices and competitive opportunities, and thus reduce exposure to currency risk. Similarly, a more viable company will be more priced in terms of market flexibility and more resistant to unfavorable market trends and, consequently, less vulnerable to unexpected fluctuations in foreign exchange rates than less profitable companies. On the contrary, in companies with a higher level of leverage there is a greater possibility of creating financial troubles due to increasing the risks in their business. Therefore, the degree of efficiency of asset management and the degree of profitability, on the one hand, and the degree of exposure of the company to currency risk, on the other hand, are indirectly proportionate, while the degree of leverage and the degree of exposure to currency risk are directly proportional.

The company's exposure to currency risk is also affected by its hedging activities. Intensive use of operational techniques and currency derivatives as hedging instruments should reduce the company's exposure to currency risk. Therefore, hedging and the exposure of a company to currency risk are indirectly proportionate.

Companies that are integrated with other companies into a large business system, such as keiretsu in Japan, and which therefore have greater liquidity and less chance of getting into financial trouble, will be less interested to protect themselves from the currency risk than the companies not integrated with other companies. Better connectivity with banks and easier access to finance make the company operating in a large business system more financially stable, less interested in hedging and more exposed to the currency risk. From this it follows that the integration with other companies and the exposure to currency risk, in theory, are directly proportional.

Erdogan examined on a sample of 125 non-financial companies operating in Turkey whether the size of the company, export activity, foreign investment, asset management efficiency, profitability, level of leverage and hedging affect their exposure to currency risk. According to the obtained results, the export activity, the asset management efficiency and the level of profitability, on the one hand, and the exposure of the company to currency risk, on the other hand, are indirectly proportionate and this relationship is statistically significant, while the level of leverage and the company's exposure to currency risk are directly proportionate and this relationship is also statistically significant. It was found that the relationship between foreign investments and the implementation of hedging

using derivatives, on the one hand, and the company's exposure to currency risk, on the other hand, is not statistically significant. The size of the company and its exposure to currency risk are indirectly proportionate in the short term, which means that large companies are less exposed and small companies are more exposed to currency risk in the short term (see more in: Erdogan, 2016).

He and Ng investigated on a sample of 171 Japanese multinational companies whether the company's size, export activity, liquidity level, level of leverage, hedging and integration with other companies affect their exposure to currency risk. After conducting the survey, they found that companies are less exposed to currency risk the smaller they are, the lower the volume of their export activity is, the lower the level of short-term liquidity is, the higher the level of financial leverage is, the higher the level of protection against currency risk is, and if they operate independently of other companies, i.e. they are not integrated into a large business group, so-called keiretsu. Different relationship between the degree of liquidity and the level of leverage, on the one hand, and the exposure to currency risk, on the other hand, in relation to the theoretical understanding of this relationship, is explained by the claim that companies with a lower level of short-term liquidity and a higher level of financial leverage more inclined to implement hedging activities and reduce exposure to currency risk in this way. Companies, even those with a high level of financial leverage, which have established strong links with banks in keiretsu, have a lower risk of bankruptcy and fewer illiquidity problems than companies that operate independently of other companies, i.e. which are not a part of keiretsu. Membership in the keirets group causes less interest among member companies to conduct activities to protect against currency risk and, consequently, greater exposure to currency risk in relation to interest for hedging activities and exposure to currency risk of companies that are not members of a group, respectively (see more in: He & Ng, 1998).

On a sample of 117 Dutch companies, De Jong, Ligterink and Macrae investigated whether the size of the company, export activity and hedging impact their exposure to currency risk. They found that the size of the company and the export activity, on the one hand, and the exposure to currency risk, on the other hand, are directly proportional. In contrast to the previous research in which the authors focused on the impact of hedging implementation by using derivatives or off-balance sheet hedging, on the company's exposure to currency risk, in this research the authors examined the impact of the implementation of both off-balance sheet hedging and on-balance sheet hedging (which implies the use of balance instruments, for example transferring production to another location or borrowing in foreign currency for hedging purposes) on the company's exposure to currency risk. According to the obtained results, the implementation of off-balance sheet hedging and the company's exposure to currency risk are directly

proportional, whereby this relationship is not statistically significant. Therefore, the obtained result is in contradiction with the theoretical attitude about the relationship between the observed quantities. The authors gave two explanations for the absence of the expected indirect proportionate relationship. First, the companies that are exposed to economic risk rarely declare to eliminate this risk completely. The second explanation is related to the lack of information on hedging through derivatives provided to investors. Information from annual reports, as a rule, does not allow investors to predict the results of using derivatives. Since hedging information is not freely available, it is not unusual for investors not to be familiar with the hedging programs of companies and, consequently, this information is not fully incorporated in share prices. The statistical insignificance of the relationship between the implementation of off-balance sheet hedging and the company's exposure to currency risk was explained by the fact that Dutch companies use derivatives, mainly to reduce transaction risk while leaving the economic risk most often unprotected. Regarding the obtained result related to the relationship between the implementation of the on-balance hedging and the company's exposure to currency risk, it coincides with the theoretical attitude on the concrete relation. In other words, the authors found that the implementation of the on-balance hedging and the company's exposure to foreign exchange risk are indirectly proportionate and that the relationship is statistically significant. Thus, Dutch companies in which on-balance hedging is on a higher level are less exposed to currency risk. After summing up the results of the survey, the question arose as to why different hedging types have a different effect on the exposure of Dutch companies to currency risk. The authors gave two answers to this question too. First, balance hedging is a long-term character. Moving production to another location and borrowing in foreign currency with the aim of hedging affect the company's exposure to currency risk in a much longer period than the average validity period of currency derivatives. Therefore, on-balance hedging is more in the function of reducing economic exposure, and off-balance hedging is in the function of reducing the company's transactional exposure to currency risk. The second answer to the above question arises from the fact that the on-balance hedging is more visible from the company's annual reports, so the investors can better anticipate its effects on the company's exposure to currency risk (see more in: De Jong, Ligterink & Macrae, 2006).

Júnior examined on a sample of 173 Brazilian non-financial companies, whether the internationalization of operations, foreign currency borrowing and the implementation of hedging by using derivatives influence their exposure to currency risk. According to the obtained results, the answers to the research questions are affirmative. The internationalization of operations and foreign currency debt, on the one hand, and the exposure of the company to currency risk,

on the other hand, are directly proportional, while the implementation of hedging using derivatives and the company's exposure to currency risk are indirectly proportionate (see more in: Júnior, 2011).

Hagelin and Pramborg researched in three phases on 101, 130 and 128, respectively, Swedish non-financial companies listed on Stockholm Stock Exchange and headquartered in Sweden, whether, in general, the implementation of hedging by using derivatives and borrowing in foreign currency, as well as whether the implementation of hedging of transactions and translational exposures affects the company's exposure to currency risk. Investigating the impact of the hedging of transactional and translational exposure on the company's exposure to currency risk is of interest because these two types of exposures have a different impact on the company's value. Namely, if adequately executed, hedging of transactional exposure should reduce the variability of cash flows and, consequently, the variability of the company's value. As for translational exposure, the general recommendation of financial theory is that it is not necessary to worry about it, nor to protect from it. There are two reasons why financial theory gives such recommendation. The first reason is that translation profits or losses tend to be unrealized, and therefore have a small direct impact on the company's cash flows. The other reason is poor estimates of the actual changes in the value of the company. If these reasons are justified, the management of translational exposure should be ineffective in reducing the exposure of companies to currency risk. According to the obtained results, the implementation of hedging using derivatives, the implementation of hedging by borrowing in foreign currency, the implementation of hedging of transactional and the hedging of translational exposure contribute to the reduction of the company's exposure to currency risk. The authors explain the different relationship between the implementation of hedging of translational exposure and the company's exposure to currency risk in relation to theoretical understanding of this relationship by claiming that translational exposure approximates the amount of future cash flows from business activities in foreign affiliates, i.e. economic exposure. If the author's statement is correct, the implementation of hedging of translational exposure reduces the company's economic exposure to currency risk (see more in: Hagelin & Pramborg, 2004).

On a sample of 97 Australian companies with the largest market capitalization, Yip and Nguyen investigated whether the implementation of hedging through the use of currency derivatives influenced differently the exposure to currency risk before and after the global financial crisis. According to the results, the participation of the number of companies exposed to currency risk in the total number of the observed companies increased during the crisis. Companies that until then used currency derivatives to protect against currency risk intensified

their use during the crisis, while companies that did not use them before the crisis did not start using them even during the crisis. The authors have proven that the implementation of hedging using currency derivatives and the company's exposure to currency risk are indirectly proportionate but have not proven that the use of derivative instruments to protect against currency risk is more effective in one period than in the other. Unlike the use of foreign currency derivatives that represents a significant explanatory variable, the intensity of their use has little impact on the company's exposure to currency risk (see more in: Yip & Nguyen, 2012).

### **3. THE IMPACT OF AMBIENT FACTORS ON THE COMPANY'S EXPOSURE TO THE CURRENCY RISK**

There are three key reasons why the exchange rate regime can affect the company's exposure to currency risk. First, the exchange rate regime in one country is an important determinant of the exchange rate fluctuation. In the fixed exchange rate regimes, the exchange rate is less variable than in the flexible exchange rate regimes. The fluctuation of the exchange rate directly causes currency risk exposure of those companies that have foreign investments and liabilities as well as the expected future cash flows in foreign currency. The fluctuation of the exchange rate also affects indirectly the exposure of companies to currency risk. Some researchers have proven that the fluctuation of the exchange rate increases the hedging price, which can lead to less hedging of companies and, consequently, increases their exposure to currency risk. Second, according to the hypothesis of a moral hazard, fixed exchange rates can be viewed as an implicit state guarantee of the exchange rate stability that can reduce the companies' interest in hedging and encourage the use of foreign currency denominated and unprotected from the currency risk borrowed funding sources. The third reason why the exchange rate regime can affect the company's exposure to currency risk is that in the fixed or firmly managed exchange rate regime of the company (or their creditors) drastic devaluations and revaluations may be considered rare events, and therefore, the currency risk is underestimated and neglected. In such circumstances, it is less likely that companies will actively implement hedging to reduce their exposure to currency risk.

There are very few studies in which the authors investigated the influence of the exchange rate regime on the exposure of companies to currency risk. Parsley and Popper investigated the exposure to currency risk of companies from several Asian markets and found that during periods of strong bonding of national currencies to the US dollar the companies were very exposed to the changes in the value of the dollar and that in some countries more companies were significantly exposed to the fluctuations in the value of the dollar in the period with the fixed

exchange rate regime than in the period without (see more in Parsley & Popper, 2006). Patnaik and Shah investigated the exposure to currency risk of 100 Indian companies with the most liquid shares and found that companies were more exposed to currency risk in periods when the currency was less flexible (mentioned in Patnaik & Shah, 2010). In the mentioned studies, it has been proven that there is a thread linking the exchange rate regimes and exposure of companies to currency risk, but it has not been explored how the exchange rate regime influenced the exposure of companies to currency risk, nor how the exchange rate regimes influenced the degree of exposure of companies to currency risk.

Ye, Hutson and Muckley investigated on a sample of 1,523 companies from 20 emerging market countries for the period from December 1999 to December 2010, whether exchange rate regimes affect the exposure to foreign exchange risk of companies from emerging markets, whether the exposure of companies to foreign exchange risk changes when the exchange rate regime changes and to what extent the exchange rate regimes can explain the level of exposure of companies to currency risk. Thus, the authors of the study, while controlling a number of factors known to affect the exposure of companies to currency risk, have investigated whether the exchange rate regime is a significant determinant of the exposure of companies from emerging markets. During the period, the observed countries had different exchange rate regimes. Of the 20 surveyed countries, two countries had exclusively fixed exchange rate regimes for the entire period, 11 countries had exclusively flexible exchange rate regimes, while in 7 countries, with 186 companies, the exchange rate regime changed. The diversity of the exchange rate regime allowed the research to respond to all three research questions. According to the results, the level of exposure to currency risk is higher for companies that come countries with fixed exchange rate regimes than for companies that come from countries with flexible exchange rate regimes. The authors of the study also found that by switching from the flexible exchange rate regime to the fixed exchange rate regime, the degree of exposure of individual companies and the participation of companies exposed to currency risk also increase in the total number of the observed companies. Therefore, the answers to the first two research questions are affirmative. Regarding the third research issue, the authors have determined that the exchange rate regime is a statistically significant determinant of companies' exposure to currency risk (see more in: Ye, Hutson & Muckley, 2014).

Bacha, Mohamad, Zain and Rasid, investigated on a sample of 158 Malaysian companies listed on the Malaysian Stock Exchange for the period from January 1990 to December 2005, whether the change in the exchange rate regime influenced the exposure of companies to currency risk. Malaysia moved from the flexible exchange rate regime to the fixed exchange rate regime, by link-

ing the national currency to the US dollar, immediately after the Asian crisis in 1998, and retained the newly established regime until July 2005. According to the obtained results, the exposure of companies to currency risk, which was created due to the fluctuations of the value of the national currency relative to the value of other currencies, also existed after the establishment of the fixed exchange rate regime. The authors were interested in why the US dollar remained a significant cause for the exposure of Malaysian companies to currency risk even after fixing the relationship between its value and the value of the national currency. According to them, two factors should be taken into account in order to understand the established relationship between the fluctuations in the value of the US dollar and the exposure of Malaysian companies to currency risk during the period of the existence of the fixed exchange rate regime. These factors are the definition of exposure to currency risk and the nature of the fixed exchange rate regime. Starting from the standard definition of the company's exposure to currency risk, the authors explained the effect of fluctuations in the value of the US dollar on the exposure of Malaysian companies to currency risk during the period of the fixed exchange rate regime, by the nature of the regime or, more specifically, by the exchange rate at which the relationship between the two currencies is fixed. Namely, the exchange rate at which the relationship between the national currency and the US dollar is fixed, was higher than the real exchange rate. At such a foreign exchange rate, the value of Malaysian importing companies was destroyed and this destruction lasted until the fixed exchange rate regime existed, assuming that other factors affecting the value of the company remained unchanged. On the other hand, the value of exporting companies increased as long as the fixed exchange rate regime existed, assuming that the prices of goods expressed in the dollar remained unchanged. Therefore, the value of the company can be changed even if the exchange rate does not change. The fixed exchange rate regime eliminates the fluctuations of exchange rate and the resulting transactional exposure to currency risk, but in certain circumstances it can change the company's competitive position and, consequently, increase the economic exposure to currency risk (see more in: Bacha, Mohamad, Zain & Rasid, 2013).

On a sample of 173 Brazilian non-financial companies for the period from 1996 to 2006, Junior investigated, *inter alia*, whether the exchange rate regime, switching from the fixed to flexible exchange rate regime and changing the conditions of business caused by the financial crisis influenced the exposure of companies to currency risk. Since the beginning of the research period until 1999, the regime of the (quasi) fixed exchange rate existed in Brazil, and in the period from 1999 to 2006, a flexible exchange rate regime existed. During the period covered by the survey, Brazil faced two financial crises in 1999 (September 1998

- April 1999) and in 2002 (April 2002 - December 2002). The heterogeneity of the research period from the point of view of the current regime of the exchange rate and operating conditions enabled the author to come up with an answer to the research questions. The author found that the number of companies exposed to fluctuations in the exchange rate is higher in the fixed exchange rate regime than in the flexible exchange rate regime, ie in the conditions of the crisis rather than in normal conditions. In the flexible exchange rate regime, 14% of companies were exposed to fluctuations in the exchange rate, and in the regime of fixed exchange rate more than 20% of companies. Therefore, the value of the company is more sensitive to changes in the exchange rate in the fixed exchange rate regime than in the flexible exchange rate regime, therefore, in the fixed exchange rate regime, there is a higher probability of destabilizing economic opportunities. During the currency crisis of 1999, 52% of companies were exposed to fluctuations in the exchange rate, and during the crisis of 2002, 30% of companies. In the end, the author found that the changes in the exposure of companies to the currency risk arising from the transition from the fixed exchange rate regime to the flexible exchange rate regime were largely determined by the changes in the company's financial policy, in particular in the use of derivatives and keeping the debt denominated in foreign currency (see more in: Júnior, 2011).

Hatson and O'Driscoll were interested in whether the eurozone membership provided to companies originating from the member states of the European Monetary Union the protection against exposure to currency risk, so they explored on a sample of 1,154 companies from 11 European countries, 7 eurozone member countries - Belgium, France, the Netherlands, Italy, Germany, Portugal and Spain - and four non-euro countries - Norway, Sweden, Switzerland and the UK, the exposure of companies to currency risk before the introduction of the euro, i.e. from January 1990 to December 1998, and in the period after the introduction of the euro, i.e. from January 1999 to January 2008. Contrary to expectations, they found that in the period after the introduction of the euro, generally speaking, companies originating from the eurozone countries were more exposed to currency risk than companies that originate from non-eurozone countries. Observed individually, the companies most exposed to currency risk originated from Switzerland before and after the introduction of the euro. Companies that were least exposed to currency risk before the introduction of the euro were originally from Germany, and companies that were least exposed to currency risk after the introduction of the euro were originally from Sweden. The authors of the study also found that after the introduction of the euro, the exposure increased in companies originating from the member countries of the eurozone and in companies originating from non-eurozone countries, with the less increase in companies originating from the eurozone member countries. Evidence that,

following the introduction of the euro, an increase in currency risk exposure of companies originating from the eurozone member countries was less than the increase in exposure to currency risk for companies originating from non-eurozone countries, is a confirmation that eurozone membership provided to companies originating from the member countries of the European Monetary Union protection against the exposure to currency risk. The result obtained in the research prompted the authors to look for answers to two other research questions: How did the introduction of the euro influence the exposure to currency risk of countries inside and outside the eurozone? Why were companies originating from the eurozone countries more exposed to currency risk than companies originating from non-eurozone countries? The answer to the first question is that the exposure to the currency risk of the eurozone member countries is reduced more than the exposure of non-eurozone countries. In order to arrive at the answer to the second question, the authors examined the influence of a company characteristics (company size, business branch, foreign investment, liquidity level, leverage level and level of profitability) and a country characteristics (economic openness, level of protection of shareholders' rights and level of protection of creditors' rights) on the exposure to currency risk of companies inside and outside the euro area. The difference in the degree of exposure of the observed companies can be explained by the difference in the level of protection of shareholders' rights, the difference in the size of companies and the difference in the level of profitability (see more at: Hutson & O'Driscoll, 2010).

Bartram and Karolyi were also interested in how the introduction of the euro influenced the currency risk exposure of companies located in the eurozone and companies located outside the eurozone, which account for a significant share of their total international trade volume and investments in the eurozone. They conducted a survey on a sample of 3220 non-financial companies from 20 countries (18 European countries, the US and Japan) and found that the introduction of a common currency led to, as expected, a reduction in the exposure to currency risk of companies in general, that is those inside and outside the eurozone. Namely, only about 10% of the observed companies were significantly exposed to currency risk. In these companies, the introduction of the euro led to a net reduction in exposure to currency risk. Exposure was most reduced in companies with the smallest sales volume, but with a larger share of total international trade volume, and in particular trade in Europe, in the total trade volume. Observed by the company's origin, the exposure to currency risk has been largely diminished in companies originating from the eurozone countries, then in companies that come from European non-eurozone countries and, ultimately, in companies that come from non-European countries. This means that the introduction of a com-

mon currency has most affected the currency risk exposure of eurozone companies (see more in: Bartram & Karolyi, 2006).

”Bodnar and his associates have proven that the company’s exposure to currency risk depends on its ability to transfer costs or prices caused by fluctuations in the exchange rate to its customers. This possibility depends on the level of competition in the economic branch in which the company operates, and which affects the price elasticity of demand and the degree of substitutability between goods. Marston has proven that the level of competition in the economic branch in which the company operates has a significant impact on the company’s exposure to currency risk.” (Agyei-Ampomah, Mazouz & Yin, 2013, 252)

In addition to the exchange rate regime, financial (non)stability, (un)affiliation to the single currency area and the level of competition in the economic branch of the company in which the company operates, the environmental factors affecting the company’s exposure to currency risk include the economic openness of the company’s country of origin and the specifics of corporate governance in the part relating to the protection of the rights of creditors and minority of shareholders and the tendency towards (non)implementation of hedging, also in the company’s country of origin. Theoretically, economic openness of the company’s country of origin and the exposure of the company to currency risk are directly proportional, and the level of protection of the rights of creditors and minority of shareholders and the propensity for the implementation of hedging in order to preserve and increase the value for shareholders, on the one hand, and exposure to currency risk, on the other hand, are indirectly proportionate. An empirical check of the mentioned relations was done on a sample of 1,388 companies from 23 developed countries by Hatson and Stevenson. They found that in more economically open countries the economic exposure of companies is higher. As the world economy is becoming increasingly integrated due to the increase in the volume of cross-border trade and investments and as the competition on the world market is increasing, companies will be increasingly exposed to currency risk. Managers all over the world, even in those companies that were previously protected from the competition, should be aware that economic exposure to currency risk is becoming a reality, it is growing and requires their commitment and strategic management. The authors also found that the level of protection of the creditors’ rights (and to a lesser extent the level of protection of the minority of shareholders’ rights) and the exposure of the company to currency risk are indirectly proportionate. They explain the obtained results with a pronounced tendency to implement hedging in countries where creditors are well protected. Thus, in their research, the authors confirmed the theoretical attitude about the research relations and proved that the economic openness of the company’s country of origin and the specifics of corporate governance in the

company's country of origin are the determinants of the company's exposure to currency risk (see more in: Hutson & Stevenson, 2010).

## CONCLUSION

Theoretical attitudes about the impact of company characteristics and ambient factors on the company's exposure to currency risk are consistent. In theory, the size of the company, the indicators of export activity and foreign investments (i.e. the degree of internationalization of operations), the degree of leverage and the integration with other companies are the company characteristics that are directly proportional to its exposure to currency risk. The company characteristics that are indirectly proportional to its exposure to currency risk are the degree of liquidity, the degree of efficiency of asset management, the degree of profitability and hedging. Ambient factors affecting the company's exposure to currency risk are: exchange rate regime, financial (un)stability, (un)affiliation to a single currency area, the level of competition in the economic branch in which the company operates, the economic openness of the company's country of origin and the specificities of corporate governance in the part which refers to the protection of the rights of lenders and minority of shareholders and the tendency towards (non)implementation of hedging, also in the company's country of origin. The company is more exposed to currency risk if it is located in a country with a fixed exchange rate regime, in a financially unstable country, in a country that is not a member of a single currency area, in a country where competition in the economic branch of the company is strong, in more economically open country and/or in a country with a low degree of protection of the rights of creditors and minority of shareholders and low preference for the implementation of hedging in order to preserve and increase value for shareholders, than if it is located in a country with the opposite characteristics of a business environment.

In an effort to find an answer to the question of what influences the company's exposure to currency risk, various researchers have conducted empirical research. On the basis of the obtained results, it is not possible to answer the research question with certainty. Theoretical attitudes about the influence of ambient factors on the company's exposure to currency risk have been empirically confirmed. The influence of liquidity, the degree of efficiency of asset management, the degree of profitability and integration with other companies has been confirmed empirically, but in a small number of studies. The obtained results of empirical investigations of the influence of other characteristics of the company, i.e. the size of the company, the degree of internationalization of operations, the level of leverage and hedging, on its exposure to currency risk are not unambiguous. Since the theoretical attitudes about the influence of company characteris-

tics are not confirmed at all or not confirmed in a sufficient number of empirical studies, one can not conclude which company characteristics affect its exposure to currency risk and how they do that.

In order for the theory of international financial management to provide financial managers in companies with useful knowledge that could be applied in practice, a number of empirical research should be conducted on the determinants of the company's exposure to currency risk. In this way, assumptions would be created for confirming or challenging the theoretical positions already formulated, as well as establishing new attitudes. Knowledge on how to determine the company's exposure to currency risk could be used in future research. Based on this knowledge, researchers could more easily identify the key causes of excessive exposure of companies to currency risk. Future empirical research could go in that direction, i.e. in the direction of investigation of the cause of the excessive exposure of differently grouped companies to currency risk. When they become familiar with the key causes of excessive exposure of a company to currency risk and the direction of the individual characteristics of the company and the environment in which their companies operate, financial managers will be able to make more effective corrective measures to reduce exposure to an acceptable level.

## REFERENCES

- Agyei-Ampomah, S., Mazouz, K., & Yin, S. (2013). The foreign exchange exposure of UK non-financial firms: A comparison of market-based methodologies. *International Review of Financial Analysis*, 29, 251-260. doi: 10.1016/j.irfa.2012.05.006
- Antoci, V. (2015). Managing transaction exposure in MNCs. URL: <https://www.theseus.fi/bitstream/handle/10024/104281/Vitalie%20Antoci%20-%20Transaction%20Exposure.pdf?sequence=1>
- Bartram, S. M., & Karolyi, G. A. (2006). The impact of the introduction of the Euro on foreign exchange rate risk exposures. *Journal of Empirical Finance*, 13(4-5), 519-549. doi: 10.1016/j.jempfin.2006.01.002
- Bash, A. (2016). To hedge or not to hedge foreign exchange exposure: A GCC perspective. *International Research Journal of Finance and Economics*, 146, 32-42. URL: [https://www.researchgate.net/publication/305711325\\_TO\\_HEDGE\\_OR\\_NOT\\_TO\\_HEDGE\\_FOREIGN\\_EXCHANGE\\_EXPOSURE\\_A\\_GCC\\_PERSPECTIVE](https://www.researchgate.net/publication/305711325_TO_HEDGE_OR_NOT_TO_HEDGE_FOREIGN_EXCHANGE_EXPOSURE_A_GCC_PERSPECTIVE)
- Bacha, O. I., Mohamad, A., Zain, S. R. S. M., & Rasid, M. E. S. M. (2013). Foreign exchange exposure and impact of policy switch—the case of Malaysian listed firms. *Applied Economics*, 45(20), 2974-2984. doi: 10.1080/00036846.2012.684790
- Bhaskaran, P. B., & Priyan, P. K. (2015). Strategies of Indian firms in coping with forex risk management: an inquiry through case-research method. *SDMIMD Journal of Management*, 6(1), 13-23. doi: 10.18311/sdmimd/2015/3961

- De Jong, A., Ligterink, J., & Macrae, V. (2006). A Firm-Specific Analysis of the Exchange-Rate Exposure of Dutch Firms. *Journal of International Financial Management & Accounting*, 17(1), 1-28. doi: 10.1111/j.1467-646X.2006.00119.x
- Erdogan, M. (2016). Foreign Exchange Exposure and Hedging of Turkish Companies: Panel Data Evidence. *International Business Research*, 9(6), 44. doi: 10.5539/ibr.v9n6p44
- Júnior, J. L. R. (2011). Exchange rate exposure, foreign currency debt, and the use of derivatives: evidence from Brazil. *Emerging Markets Finance and Trade*, 47(1), 67-89. doi: 10.2753/REE1540-496X470104
- Marston, R. C. (2001). The effects of industry structure on economic exposure. *Journal of International Money and Finance*, 20(2), 149-164. doi: 10.1016/S0261-5606(00)00052-8
- Parsley, D. C., & Popper, H. A. (2006). Exchange rate pegs and foreign exchange exposure in East and South East Asia. *Journal of International Money and Finance*, 25(6), 992-1009. doi: 10.1016/j.jimonfin.2006.07.009
- Patnaik, I., & Shah, A. (2010). Does the currency regime shape unhedged currency exposure? *Journal of International Money and Finance*, 29(5), 760-769. doi: 10.1016/j.jimonfin.2009.12.007
- Hagelin, N., & Pramborg, B. (2004). Hedging foreign exchange exposure: risk reduction from transaction and translation hedging. *Journal of International Financial Management & Accounting*, 15(1), 1-20. doi: 10.1111/j.1467-646X.2004.00099.x
- He, J., & Ng, L. K. (1998). The foreign exchange exposure of Japanese multinational corporations. *The Journal of Finance*, 53(2), 733-753. doi: 10.1111/0022-1082.295575
- Hutson, E., & O'Driscoll, A. (2010). Firm-level exchange rate exposure in the Eurozone. *International Business Review*, 19(5), 468-478. doi: 10.1016/j.ibusrev.2009.02.00
- Hutson, E., & Stevenson, S. (2010). Openness, hedging incentives and foreign exchange exposure: A firm-level multi-country study. *Journal of International Business Studies*, 41(1), 105-122. doi: 10.1057/jibs.2009.32
- Ye, M., Hutson, E., & Muckley, C. (2014). Exchange rate regimes and foreign exchange exposure: The case of emerging market firms. *Emerging Markets Review*, 21, 156-182. doi: 10.1016/j.ememar.2014.09.001
- Yip, W. H., & Nguyen, H. (2012). Exchange rate exposure and the use of foreign currency derivatives in the Australian resources sector. *Journal of Multinational Financial Management*, 22(4), 151-167. doi: 10.1016/j.mulfin.2012.06.003

## ДЕТЕРМИНАНТЕ ИЗЛОЖЕНОСТИ КОМПАНИЈЕ ВАЛУТНОМ РИЗИКУ: ТЕОРИЈСКО-ЕМПИРИЈСКА АНАЛИЗА

1 Nermina Pobrić, Универзитет у Источном Сарајеву, Економски факултет Брчко

### САЖЕТАК

У овом раду предмет разматрања су детерминанте изложености компаније валутном ризику. Аутор у раду презентује релевантна теоријска сазнања и резултате емпиријских истраживања детерминанти изложености компаније валутном ризику.

Усаглашени су теоријски ставови о утицају карактеристика компаније и амбијенталних фактора на изложеност компаније валутном ризику. У теорији, величина предузећа, индикатори извозне активности и страна улагања (односно степен интернационализације пословања), степен полуге и интеграција са другим компанијама су карактеристике компаније које иду у истом правцу као и изложеност компаније валутном ризику. Карактеристике компаније које иду у супротном правцу у односу на изложеност компаније валутном ризику су степен ликвидности, степен ефикасности управљање имовином, профитабилност и хеџинг. Амбијентални фактори који утичу на изложеност компаније валутном ризику су: режим девизног курса, финансијска (не)стабилност, чланство у јединственом валутном систему, ниво конкуренције у индустријској грани у којој компанија послује, економска отвореност земље из које компанија потиче, и специфичности корпоративног управљања које се односе на заштиту права кредитора и мањинских акционара и на тенденција према (не)имплементацији хеџинга, такође у земљи из које компаније потиче. Компанија је изложенија валутном ризику ако се налази у земљи са фиксним режимом девизног курса, у финансијски нестабилној земљи, у земљи која није чланица јединственог валутног система, у земљи у којој је конкуренција у индустријској грани у којој компанија послује јака, у економски отворенијој земљи, и/или у земљи у којој је степен заштите права кредитора и мањинских акционара низак и гдје постоји слаба тенденција према спровођењу хеџинга како би се очувала и повећала вредности за акционаре, него ако се налази у земљи са супротним карактеристикама пословног окружења.

У емпиријским истраживањима потврђени су теоријски ставови о утицају амбијенталних фактора на изложеност компаније валутном ризику, али теоретски ставови о утицају карактеристика компаније нису уопште потврђени, или нису потврђени у довољном броју емпиријских студија.

Утицај ликвидности, степен ефикасности управљања имовином, ниво профитабилности и интеграција са другим компанијама су потврђени у емпиријским, али у малом броју студија. Добијени резултати емпиријских истраживања у којима је испитан утицај осталих карактеристика компаније, као што су величина компаније, степен интернационализације пословања, ниво полуге и хедџинг, на изложеност компаније валутном ризику нису једнозначни. Пошто теоријски ставови о утицају карактеристика компаније нису потврђени уопште, или нису потврђени у довољном броју емпиријских студија, није могуће закључити које карактеристике и на који начин утичу на њезину изложеност валутном ризику.

**Кључне ријечи:**

девизни курсеви, изложеност валутном ризику, детерминанте изложености валутном ризику, карактеристике компаније, амбијентални фактори