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ECONOMIC EXPOSURE OF EMERGING MARKET FIRMS

Although foreign exchange risk inherits more severe exposures for emerging market firms, past empirical research addressing foreign exchange exposure is mainly concentrated on firms operating in developed economies. This paper examines the impact of exchange rate fluctuations on firm value at an emerging market through focusing on economic exposure of Turkish listed firms. The findings indicate that depreciation of Turkish lira against the euro, the US dollar and the basket currency significantly deteriorates firm value in a current month while significantly enhances firm value during the next month. When the overall impact of Turkish lira depreciation on the value of Turkish companies is considered, it is observed that the weakening of the home currency has a positive effect on firm's value.

Keywords: foreign exchange risk; economic exposure; emerging markets; Turkish lira.

Ече Карадаглі

ЕКОНОМІЧНА ВРАЗЛИВІСТЬ ФІРМ НА РИНКАХ, ЩО РОЗВИВАЮТЬСЯ

У статті описано вплив валютних ризиків на фірми країн, що розвиваються. Дослідження щодо економічної вразливості, пов'язаної з валютними ризиками, частіше присвячуються фірмам розвинених країн. У цій статті проведено аналогічне дослідження, але на прикладі Туреччини як ринку, що розвивається, та турецьких фірм з котируванням на фондовій біржі. Результати аналізу вказують на те, що знецінення турецької ліри відносно євро, американського долару та валюти кошику суттєво підриває позиції фірм на ринку в поточному місяці, однак за місяць позиції фірм суттєво покращуються. У цілому, вплив знецінення турецької ліри на вартість акцій турецьких фірм можна назвати позитивним.

Ключові слова: валютний ризик; економічна вразливість; ринки, що розвиваються; турецька ліра.

Форм. 2. Табл. 1. Літ. 53.

Эче Карадагли

ЭКОНОМИЧЕСКАЯ УЯЗВИМОСТЬ ФИРМ НА РАЗВИВАЮЩИХСЯ РЫНКАХ

В статье описано влияние валютных рисков на фирмы развивающихся стран. Исследования по экономической уязвимости, связанной с валютными рисками, чаще посвящены фирмам развитых стран. В данной статье проведено аналогичное исследование, но на примере развивающегося рынка Турции и турецких фирм с котировками на фондовой бирже. Результаты анализа указывают на то, что обесценивание турецкой лиры относительно евро, американского доллара и валюты корзины существенно подрывает позиции фирм на рынке в текущем месяце, однако через месяц позиции фирм существенно улучшаются. В целом, влияние обесценивания турецкой лиры на стоимость акций турецких фирм можно назвать позитивным.

Ключевые слова: валютный риск; экономическая уязвимость; развивающиеся рынки; турецкая лира.

Introduction. Following the collapse of the Bretton Woods System, the newly emerging international monetary era of fluctuating exchange rate regimes lead to new problems for businesses around the world. As exchange rates impact the value of all assets and liabilities as well as competitiveness of firms and nations, changes in

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exchange rates create major risks for corporations, nations and even for households. The problems associated with fluctuating exchange rates are coupled with the liberalization of the world trade and investment as well as the integration of financial markets. Thus, although at first glance it seems as if only those firms who engage in international activities in any form such as foreign direct investment, and international trade, will be exposed to foreign exchange risk, all firms operating in open economies, even purely domestic ones that have no international activity in any form will be affected by changes in foreign exchange rates through its impact on the competitiveness of firms at domestic markets. Hence, it can be argued that all firms, directly or indirectly, are exposed to foreign exchange risks.

Madura (1995) defines the foreign exchange rate risk as the risk that company's performance will be affected by exchange rate movements. As Levi (1996) clarifies foreign exchange risk is related to variability of domestic currency values of assets, liabilities, or operating incomes due to unanticipated changes in exchange rates whereas foreign exchange exposure is what at risk is. Hence, following Hekman (1983), Adler and Dumas (1984) and Oxelheim and Wihlborg (1987), Levi (1996) defines foreign exchange exposure as the sensitivity to changes in real domestic-currency value of assets, liabilities, or operating incomes to unanticipated changes in exchange rates.

Actually, we can refer to 3 basic types of foreign exchange rate exposure in literature, namely the transaction exposure, economic (or operating) exposure² and translation (or accounting) exposure. Transaction exposure is related to the sensitivity of realized domestic currency values of firm's contractual cash flows denominated in foreign currencies to unexpected exchange rate changes (Eun and Resnick, 2004). Thus, it deals with changes in cash flows that result from existing contractual obligations (Eiteman et al., 2001). Translation exposure arises as a result of the process of consolidation of foreign currency items into group financial statements denominated in a currency of a parent company (Buckley, 2004). And economic exposure can be defined as the extent to which the value of a firm would be affected by unanticipated changes in exchange rates (Eun and Resnick, 2004) where the change in value depends on the effect of exchange rate change on future sales volume, prices and costs (Eiteman et al., 2001). Thus, any company whose revenues or costs are affected by currency changes has some sort of economic exposure, even if it is a purely domestic corporation and has all its cash flows denominated in home currency (Shapiro, 1998).

Given the vulnerability of firms to exchange rate fluctuations, economic exposure is a vital concern of all firms. Thus, not surprisingly, there is a vast array of research investigating foreign exchange exposure at different levels: many studies were designed to empirically investigate foreign exchange exposure of firms (He and Ng, 1998; Doidge et al., 2002), industries (Bodnar and Gentry, 1993; Jorion, 1991) and nations (Entorf, 2007).

Economic exposure of firms. As being the broadest type of foreign exchange exposure, economic exposure may be visualized as the overall impact of foreign exchange rate fluctuations on stockholders' wealth or i.e. the market value of common stock (Menguturk, 1994). In technical terms, economic exposure is the extent

² Economic exposure is sometimes also referred to as competitive exposure or strategic exposure.

to which the value of a firm as measured by the present value of its expected cash flows will change when exchange rates changes (Shapiro, 1998). There are many studies that provide empirical support for the fact that exchange rate risk is priced at stock markets (Korajczyk and Vaillat, 1992; Ferson and Harvey, 1994; Dumas and Solnik, 1995; Choi et al., 1998; De Santise and Gerard, 1998; Doukas, Hall and Lang, 1999). But surprisingly, earlier studies fail to provide enough support for foreign exchange rate exposure (Adler and Dumas, 1984; Jorion, 1990; Choi et al., 1992; Bartov and Bodnar, 1994; Choi and Prasad, 1995). However, most of those studies were conducted for the US which can be argued to have a relatively less open economy. But as argued by De Jong et al. (2002), the level of economy openness has a large impact on the number of firms with significant exchange rate exposure, providing a partial explanation for why earlier studies have found weak exposure which receives empirical support from several studies carried for relatively small and open economies by reporting increased significant exposure (Bodnar and Gentry, 1993; He and Ng, 1998; Glaum et al., 2000; Nydahl, 1999; Rees and Unni, 2006). Nevertheless, the findings of Bratham and Karyoli (2006) which report significant reductions in market risk exposures with the advent of euro for nonfinancial firms both inside and outside Europe can be argued to be an indication of foreign exchange exposure. But still the overall evaluation of conflicting previous research demonstrates the lack of consensus any way³. While some studies suggest weak or no exposure (Khoo, 1994; Griffin and Stulz, 2001), some other studies demonstrate significant exposure (Glaum et al., 2000; De Jong et al., 2002; Doidge et al., 2002; Dominguez and Tesar, 2006; El-Masry and Abdel-Salam, 2007).

Although foreign exchange rate exposure can be argued to be more important for developing economies, as movements in exchange rate can affect export sectors, and perhaps even the entire economy, the literature addressing foreign exchange rate risk is mainly focused on firms operating in developed economies (Madhava and Dash, 2009) while the foreign exchange rate exposure in developing economies is relatively understudied. However, foreign exchange risk is obviously a more important concern of emerging market firms for several reasons. First of all, as also argued by Naghshpour and Marie (2008), emerging economies are more globalized than others. Second, liquidity burden is among the most pronounced obstacles faced by emerging market firms. Next, access to international capital markets is relatively more difficult and limited for emerging market firms. Last but not least, emerging market currencies are generally more vulnerable and experience wider fluctuations. In accordance with the above arguments the study by Bartram and Bodnar (2011) suggested that the return impact per unit of currency exposure is larger for firms at emerging markets compared to the developed ones. Since foreign exchange risk can be argued to inherit more severe exposures for emerging market firms, this paper aims to examine the economic exposure of Turkish listed companies.

Data and Methodology. The early studies examining foreign exchange exposure of firms and industries were based on modelling its impact on firm's cash flows (Flood and Lessard, 1986; Hekman, 1985; Hodder, 1982; Shapiro, 1974) which predict that cash flow sensitivity of a firm to exchange rate should depend on the nature of firm's

³ See Bartram and Bodnar (2007) for a brief review of past empirical research.

activities, such as its exports and imports, involvement in foreign operations, the currency denomination of its competition, and competitiveness of its input and output markets (Bodnar and Wong, 2003).

The work by Adler and Dumas (1980; 1984) can be regarded as a pioneering one in exposure literature providing a widely employed standard approach to measuring exposure through estimating the sensitivity of stock returns to exchange rate changes:

$$R_{i,t} = \beta_0 + \beta_1 S_t + \varepsilon_t, \quad (1)$$

where $R_{i,t}$ is the i th stock's return for period t ; S_t is the change in exchange rate variable for the period t .

This approach is then revised by Jorion (1990) with the inclusion of the market return variable, which is employed by several studies and may be argued to be another corner stone in the exposure literature:

$$R_{i,t} = \beta_0 + \beta_1 S_t + \beta_2 R_{m,t} + \varepsilon_t, \quad (2)$$

where $R_{m,t}$ represents the market return for the period t .

Hence, the model of Jorion (1990) can be regarded as a CAPM-based extension of the Adler and Dumas (1980; 1984) model. Since then many new approaches were adopted such as arbitrage pricing theory-based and 3-factor model-based.

In this study, the economic exposure of Turkish listed companies is examined for the period 01/2001-12/2012 by using the Jorion's CAPM-based model. Following such researches as Jorion (1990), Loudon (1993a, b), Chow, Lee and Solt (1997a, b), He and Ng (1998), Pritamani et al. (2004), monthly data is used.

To represent the market, BIST100 Index is used and the above model is replicated for 3 different exchange rate variables, specifically the euro, the US dollar and the basket currency stated in foreign currency terms. The basket currency is composed by the arithmetic average of the euro and the US dollar representing the predominated role of these two currencies in international activities of Turkish firms.

The stock returns, the market return and the percentage change in the exchange rate variables are calculated with the closing price data, obtained from the Bloomberg.

Also, considering that the impact of lagged exchange rate exposure on stock returns may be argued to be more meaningful for stock returns than contemporaneous changes (Amihud, 1994; Bartov and Bodnar, 1994; He and Ng, 1998; Donnelly and Sheehy, 1996; Shin and Soenen, 1999; Chaio et al., 2001; Di Iorio and Faff, 2001; Krishnamoorthy, 2001; Doukas et al., 2003; El-Masry, 2006), several lag adjustments are adopted and insignificant ones are omitted.

Research results. Economic exposure of Turkish listed firms are investigated by using the fixed effect panel method for each of the 3 exchange rate variables separately and the findings obtained from the replicated models by using the basket currency, the euro and the US dollar is provided in Table 1.

As the results presented in Table 1 reveal, depreciation of Turkish lira (as the foreign exchange variable is stated in foreign currency terms that is; 1 foreign currency equals this much Turkish lira) against all 3 exchange rate variables used in the model, significantly deteriorates firm value in the current month while significantly enhances firm value during the next month with an overall positive effect on firm value following the depreciation of the home currency.

Table 1. Fixed Effect Panel Estimations

	COEFICIENTS		
	Euro	US dollar	Basket currency
	0.009312*** (2.723717)	0.009625* (2.979632)	0.009471*** (2.848245)
S	-0.097838* (-1.641030)	-0.125859** (-2.217868)	-0.121709** (-2.071651)
S(-1)	0.142356* (1.768989)	0.170728** (2.080232)	0.171153** (2.073815)
R _m	0.816375*** (23.51198)	0.805164* (23.74778)	0.808627*** (23.55859)

Notes: t-statistics are presented in parentheses.

***, **, * denote statistical significance at 1%, 5% and 10% levels, respectively.

The findings indicate that a 1% depreciation of Turkish lira against the euro decreases the value of firms by approximately 9.8% on average at the 10% significance level and that 1% depreciation of the Turkish lira against the US dollar decreases the value of firms by approximately 12.6% on average at the 5% significance level in the current month. However, during the following month the 1% depreciation of Turkish lira against the euro enhances the value of firms by approximately 14.2% on average at the 10% significance level and that the 1% depreciation of lira against the US dollar enhances the value of firms for approximately 17.1% on average at the 5% significance level. When the overall impact of 1% depreciation of Turkish lira against the euro and the US dollar is considered, the findings imply that approximately 4.5% increase in the value of firms on average for both currencies. The findings obtained for the basket currency provide similar results, with robustness to the findings obtained for the euro and the US dollar. As can be followed from Table 1, a 1% depreciation of Turkish lira against the basket currency decreases the value of firms by approximately 12.2% on average at the 5% significance level in the current month and enhances the value of firms by approximately 17.1% on average at the 5% significance level during the next month with the overall impact of approximately 4.5% increase in the value of firms on average.

When the overall impact of a Turkish lira depreciation on the value of Turkish companies are considered, it is seen that the weakening of the home currency have positive effect on firms' value.

Concluding remarks. Given the vulnerability of firms to exchange rate fluctuations, foreign exchange exposure is a vital concern for all firms. However, although foreign exchange risk inherits more severe exposures for emerging market firms, past empirical research addressing foreign exchange exposure is mainly concentrated on firms operating in developed economies. This paper examines the foreign exchange exposure of emerging market firms by focusing on the economic exposure of Turkish listed firms. As being the broadest type of foreign exchange exposure, economic exposure may be visualized as the overall impact of foreign exchange rate fluctuations on stockholders' wealth or i.e. the market value of the common stock (Menguturk, 1994). So, for this purpose, this research paper investigates the impact of exchange rate fluctuations on the stock returns.

The findings indicate that depreciation of Turkish lira against the euro, the US dollar and the basket currency significantly deteriorates firm value in the current

month while significantly enhances firm value during the next month. This result may seem confusing at the first glance. However, the observed value deteriorating effect of Turkish lira depreciation in the current month may arise due to such factors as transaction exposure and liquidity problems faced by firms or through worsening expectations which will increase the risk aversion at the market causing risk premiums increase and hence stock prices decrease, and the observed value enhancing effect of Turkish lira depreciation during the next month may arise due to increased competitiveness. Depreciation of home currency will cause the relative price of exports fall and the relative price of imports rise. Thus, following the worsening of the home currency, the products of Turkish firms will become relatively cheaper and the imported products will become relatively more expensive which will in turn cause exports (or sales in general) increase and imports decrease. As a result, the net export position of firms will improve with higher sales volume. Accordingly, the net exports of the country will also increase and foster its economic growth. Besides, all these factors will affect expectations positively. Then the investors' positive expectations regarding the economy's growth and sales of firms will translate into a fall in risk aversion at the market and thus will cause risk premiums decrease. Accompanied with the improved belief in firms' performance, stock prices and hence returns will increase.

When the overall impact of Turkish lira depreciation on the value of Turkish companies are considered, it is observed that the weakening of the home currency have a positive effect on the firm value indicating that the worsening of the home currency is not always bad for domestic firms.

As the findings indicate that the overall impact of exchange rate fluctuations on the value of Turkish firms depend on the time period under consideration, these results also provide an additional partial explanation for the past contradictions empirical research.

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