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"CORPORATE INTERNATIONAL DIVERSIFICATION, EXCHANGE RATE EXPOSURE, AND FIRM VALUE"

AN ANALYSIS ON UNITED KINGDOM MULTINATIONALS

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Abstract

It is widely believed that exchange rate exposure can affect the value of the multinationals. More specifically, an increase in home currency value decreases multinationals value by decreasing foreign currency dominated cash flows and assets, and vice-versa. However, empirical results found on this issue are contradictory. This study investigates this contradictory issue by analyzing performance of 103 United Kingdom based multinationals from FTSE-250 from the time period of January 2005 to July 2010. This study is considering stock return as an indicator of firm value and using two factor regression model proposed by Jorion (1990). The study has not found any significant relationship between pound sterling value and UK multinationals value. Regression analysis has shown that approximately 85% UK multinationals do not have any significant relationship between pound sterling fluctuation and firm value. Only approximately 6% multinationals with significant t-value and negative beta coefficient accept the theory that depreciation in pound sterling value increases firms' value. Around 9% multinationals with significant t-value and positive beta coefficient for exchange rate contradict with the theory.

Keywords: Multinational Corporation, Firm Value, International Business, Exchange Rate Exposure, International Diversification, UK Multinationals

INTRODUCTION

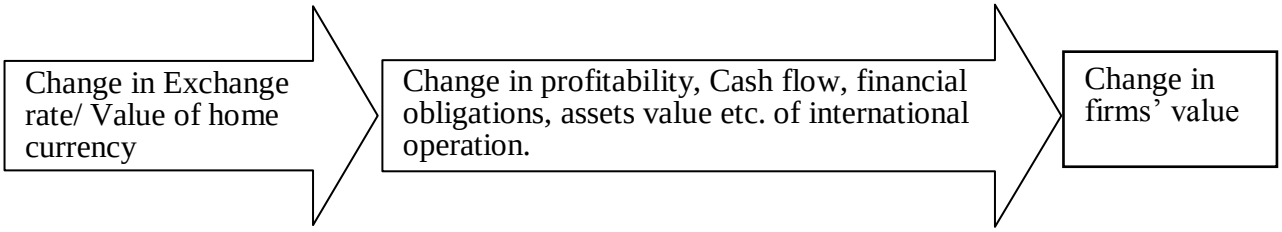
International Diversification

Diversification has become a common phenomenon in this twenty first century. “International Diversification” is a common term which is used for multinational businesses; that have subsidiaries, branches or affiliates in foreign country. In a simple term, businesses that have international operation in the global business market can be treated as internationally diversified company. Because of the tremendous economic growth in last two/three decades, there have been a revolution in international business environment and more firms are engaging in international operation or increasing their foreign operation enormously (Olibe 2006). Although there are many positive sides behind diversification like getting a higher market value over domestic firms (Olibe 2006 and Sturgess 2009), internationally diversified firms need to consider increased regulation and disclosure of information demanded by foreign regulatory agencies (e.g. Securities and Exchange Commission) and investors, higher exposure to market and political risk, and increased supervision from tax regulators, exchange rate risk etc. This research is only considering exchange rate concern on internationally diversified firms’ or multinationals’ value, by analyzing the sample from UK multinationals.

Exchange Rate and International Diversification

Since the countries started to practice floating exchange rate, exchange rate exposure has become a real concern for multinationals and international business organizations (Moran 2005). It is widely believed that change in exchange rate can affect the value of the multinationals by affecting multinationals cash flows generated from operation, and by affecting the value of multinationals’ foreign assets and obligations (Shin and Soenen 1998).

Figure 1: Framework for explaining impact of exchange rate fluctuation on firms’ value.



However, the issue of “exchange rate / currency conversion exposure on multinationals’ value” is still an argumentative issue. Based on the theories, if home currency value appreciates, value of multinationals decreases and vise-versa. Researches related to this issue are also contradictory, as some of these are suggesting the theory and some are saying opposite.

Objectives of the study

Until now most of the researches have been conducted on US multinationals and very few of them have been conducted on Japan, UK, other European and Asian countries. That is why, there is still scope to work with this theory, as it is not obvious that outcomes from US environment will be same for all nationalities. Objectives of this research are:

1. To identify (if there is any) significant association between exchange rate fluctuation and value of the UK multinationals.
2. To test the theory: Does appreciation in pound sterling value decrease the value of UK multinationals and depreciation in pound sterling value increase the value of UK multinationals?

LITERATURE REVIEW

Exchange Rate Exposure and International Diversification

"Exchange rate exposure" can be defined as an economic exposure of a firm towards the fluctuation of foreign exchange rate, which is a key determinant of firms' cash flow, profitability, and market value of the firm. In a simple term it can be said that, economic exposure considers sensitivity of firm value in response to foreign exchange rate movements (Miller and Reuer 1998). One of the key determinants that influences the value of the multinationals is exchange rate. All the internationally diversified firms are exposed to exchange rate exposure. According to Bartov and Bodnar (1994) exchange rate is one of the most important prices in the economy and it is the price of one country's currency in terms of another. Therefore, changes in exchange rate should have significant effect on firms' performance that has international activities. However local firms that are involved with exporting or importing are also exposed to exchange rate exposure. Even local firms that do not have any international transaction are affected by exchange rate movement, as these firms are competing with internationally diversified or multinational firms.

According to Domingueza and Tesarb (2006), foreign exchange rate exposure is correlated with firm size, multinational status, foreign sales, international assets etc. They also mentioned that firms which are exposed to foreign exchange rate movements dynamically adjust their behavior in response to exchange rate. Change in exchange rate is mostly affecting multinational firms, because multinationals need to convert their cash flows, outstanding financial obligations, assets etc. to their home currency. In addition, internationally diversified firms need to prepare consolidate financial statements with home currency. Eiteman el at (2010) concluded that currency related gains or losses can bring distractive impact on reported earnings. Bartov and Bodnar (1994) stated that profitability and firm value for most U.S. firm

with foreign sale and operation should increase/decrease with the depreciation/appreciation of the dollar value, because cash flow generated in foreign currency is needed to translate in USD.

Relationship between Home Currency Value and Multinationals Value

According to Choi and Prasad (1995), exchange rate fluctuation is one of the major sources of uncertainty affecting firms' value in open economy. Vast researches have been conducted on this issue. However previous findings contradict with each other, as some authors argue that there is no significant relationship between home currency value and the value of multinationals, but others speak about significant relationship. Bodnar et al (2003) suggest that measurement of value of multinationals depends on the level of exchange rate. After analyzing 6000 US corporations over a period of 1984-1998, Bodnar et al (2003) found that in the first three years of observation when dollar was strong, value impact of international diversification was positive. But the remaining twelve year it was negative.

After analyzing 1079 Japanese firms over the period of 1975-1995, Doukas et al (2001) found that there is a significant relationship between unanticipated yen movement and stock return of Japanese firms. They mentioned that, extensive use of foreign currency risk management strategy and foreign currency derivatives prove that market value of internationally diversified firms is correlated to exchange rate fluctuation. On the other hand, after analyzing 261 U.S. multinationals Lee and Suh (2008) found that statistically there is no significant relationship between exchange rate fluctuation and profitability of international operation for the majority of industries in U.S.A. They also argued that multinationals stocks are not correlated to exchange rate movement. They pointed out that use of foreign currency derivatives and geographic diversification save the multinationals from currency risk exposure to multinationals' profitability. Moreover, by sharing operating cost and expanding operation into other areas of business (e.g. focusing more on domestic business), could protect the multinationals from unfavorable exchange rate movement. Because of these reasons, exchange rate movement does not affect the profitability or value of the multinationals. Lee and Suh (2008) found some possible reasons why multinationals profitability is not affected by exchange rate movement, as:

- Uses of foreign currency derivatives by multinationals reduce their exchange rate exposure (Allayannis and Ofek 1998).
- Annual income of a multinational is not capable to fully capture the consequence of exchange rate movements. Because, short term losses could be offset by long term profit.
- If multinationals can promote the local demand in the event of exchange rate movement, multinationals can offset their foreign loss due to unfavorable exchange rate movement by local cash inflow.

- In addition, unfavorable exchange rate movement could be offset by moving business towards more profitable segments, decreasing operating cost, or by geographical diversification. According to Bodnar et al (2003), internationally diversified firms can reduce their marginal cost of production as they get cost structure flexibility by declaring their profit in a country where they will get lower income tax code and can find out low cost location to raise capital. These short of opportunities help internationally diversified firms to increase expected cash flow over domestic firms and get better profit margin or higher market value. Any loss because of exchange rate risk could be offset by those above mentioned advantages.

Shin and Soenen (1998) found that small multinationals are more exposed to currency fluctuation and small multinationals become profitable if US dollar becomes weaker. However, contradict to Lee and Suh (2008), they found that currency derivatives used by large multinationals are not very effective to reduce exchange rate risk. They concluded that, value of US multinationals is significantly correlated to exchange rate fluctuation.

Moran (2005) found that most of Chilean firms that are significantly exposed to currency risk and have a negative coefficient. That means depreciation in Chilean peso decreases the value of the firm. Consistent with Moran (2005), Jong el at (2006) found that all Dutch firms with significant exchange rate exposure get benefit from appreciation of the Dutch guilder. Jong el at (2006) concluded that, open economies like Netherland, have significant exchange risk exposure.

Doidge el at (2002) in their observation on 17000 non-financial firms from 18 countries found that firms' international activities are broadly and significantly exposed to foreign exchange exposure and large firms are more exposed to exchange rate exposure than small firms. Doidge el at (2002) concluded that consistent with the theory, exchange rate fluctuation has a significant impact on firms' value. Shin and Soenen (1998) concluded that multinationals are exposed to exchange rate exposure and investors price their stock in response to exchange rate fluctuation. Choi and Prasad (1995) found that about 60% of U.S. multinationals with significant exchange risk exposure gain from a depreciation of dollar. However, an analysis conducted on Japanese firms by Chow and Chen (1998) showed opposite result. Chow and Chen (1998) found that Japanese firms equity return decrease as the yen depreciate. On the other hand, He and Ng (1998) found that 25 out of 171 multinationals have significantly positive exposure to exchange rate movement and depreciation/appreciation in yen value has a favorable/adverse impact on Japanese multinationals that have at least 10% foreign sale.

It is widely believed that fluctuation in exchange rate can bring devastative effect on firms' performance, profitability or value, which has international business by bringing change to foreign currency dominated assets and liabilities. However, it is still an argumentative issue whether an increase or a decrease in home currency value can bring any change to the market value of internationally diversified firms or multinationals, as multinationals corporations use extensive hedging instruments. As a result, it not an easy task to identify a significant contemporaneous correlation between firm value (as expressed by stock return) and exchange rate fluctuations (Doukas et al 2001).

Foreign Currency Exposure Effects

Adoption of floating exchange rate between countries has bought the concept of currency exposure risk. Currency exposure can be defined as a change in market value of the firm to any unanticipated change in exchange rate (Doukas et al 2001). This definition can be explained with an equation.

$$\frac{\Delta F}{F} = \beta \frac{\Delta E}{E}$$

Here Δ F/F is the change in market value of the firm, β is the exposure of coefficient, and Δ E/E is the change in home currency value. Economic exposure to exchange rate fluctuation is estimated by the regression coefficient that shows the relationship between market value of the firm and unanticipated exchange rate change movement. Doukas et al (2001) also mentioned that firms that have large percentage of foreign revenue and cost are more exposed to foreign exchange risk rather than smaller firms. They also mentioned that domestic firms are also exposed to foreign exchange exposure as domestic firms are competing with multinationals, because change in firms' value changes its' competitive position. To find out the relationship between exchange rate movement and stock price, a precondition is needed to consider that stock price should be responsive to exchange rate movement. More specifically, it is needed to consider Efficient Market Hypothesis. Moran (2005) stated that if stock market is efficient, it will be able to capture overall impact of exchange rate changes on firm value.

Foreign Exchange Exposure Measurement

To measure foreign exchange exposure, most of the previous studies used linear regression approach. Linear regression approach assumes that firms' value reacts linearly and symmetrically to home currency appreciation or depreciation (Moran 2005). Traditional time

series regression (developed by Adler and Dumas 1984) to capture systematic effect of any expected home currency fluctuation on multinationals value is-

$$R_{st} = \beta_{io} + \beta_{ix} R_{et} + \varepsilon_{it} \quad \text{..... (1)}$$

Here R_{st} is the return of a particular stock at the time of t, R_{et} is the change in exchange rate at the time of t, ε_{it} is the error term, β_{ix} is the coefficient that measures the average sensitivity of the firm value to exchange rate change and β_{io} is the intercept (Moran, Martin and Mauer 2005). Based on this equation if exchange rate is expressed in units of local currency per units of foreign currency, a positive exposure of β_{ix} (coefficient) would signify that appreciation of local currency increases multinationals value. There are some criticisms about equation-1. According to Pritamani et al (2004) equation- 1 not only measures the firm specific effects but also other macroeconomics factors correlated to exchange rate. That means it measures total exposure or elasticity of the coefficient. To come out with this problem, Jorion (1990) incorporated market index return as a control variable with the equation-1 to analyze exchange-rate exposure of U.S. multinationals. As a result, the new equation is able to provide firm specific exposure by eliminating macroeconomics factors related with equation-1. A two factor model proposed by Jorion (1990) is

$$R_{st} = \beta_{io} + \beta_{ix} R_{et} + \beta_{im} R_{mt} + \varepsilon_{it} \quad \text{..... (2)}$$

In the equation-2, R_{mt} is the rate of return of a particular market index.

Hypothesis Development

According to Bartov and Bodnar (1994), changes in exchange rate have direct impact on price of the domestic and foreign goods and therefore, it influences both current and future expected cash flow of firms that have international involvement. Moreover, changes in exchange rate have impact on domestic currency value of international currency dominated fixed assets and liabilities. Bartov and Bodnar (1994) also mentioned that exchange rate fluctuation has created another dimension to show how exchange rate changes affect the value of a firm that has international involvements. Choi and Prasad (1995) stated that exchange rate fluctuation affects firms' operating cash flows through translation, transaction, and economic exposure. Therefore, it is expected to have a connection between exchange rate change and firm value. Based on the theories and literature review this paper has developed the following hypothesis:

H_0: There is no significant relationship between unexpected exchange rate fluctuation and multinationals' value.

METHODOLOGY

Objective of this study is to test the theory relating to exchange rate exposure and firm value. To do so this paper is identifying the relationship between pound sterling value and value of UK multinationals. Due to the dependence on international economy, United Kingdom is unquestionably well suited for this kind of study. Multinationals were selected from FTSE-250 index. Firms that have at least one international operation have been considered as multinational for this study.

Change in value of these multinationals has been determined based on their past stock return. End of month exchange rate of pound sterling against U.S. dollar is published by Bank of England and it was obtained from DataStream. Instead of selecting firms based on their sector, foreign sale, size etc., this paper is considering all the multinationals from FTSE-250 index. As a result, this study will be able to avoid possible bias to select the sample and draw a better conclusion about exchange rate exposure and UK based multinationals value. Monthly stock price from January 2005 to July 2010 of FTSE-250 index listed UK based 103 multinationals has been collected from London Stock Exchange and yahoo finance website. Multinationals that do not have the data for the entire period, are not considered for this research. UK based multinationals have been identified by studying annual reports of FTSE-250 listed multinationals.

This study is following the two factor model proposed by Jorion (1990). This model avoids most of the limitations of traditional time series regression to analyze exchange rate exposure on firms' value developed by Adler and Dumas (1984). Two factor regression model for this study is

$$S = \alpha + \beta_e E + \beta_m M + \varepsilon$$

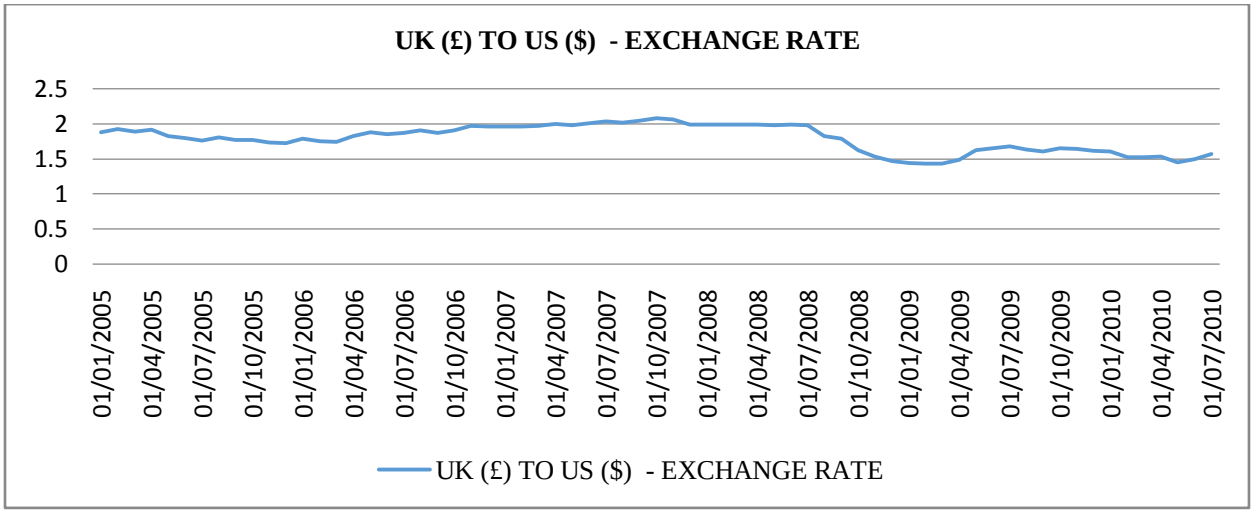
In this equation, S represents rate of stock return; E is the rate change in exchange rate, M (control variable) is the rate of return from the market index, βe and βm represent the coefficient respectively for exchange rate and market index return and ε is the error term. A negative exposure of coefficient for exchange rate would represent that appreciation in pound sterling value decreases the UK multinationals value and vies-versa. This regression model incorporates market return as a constant variable. As a result it will be able to eliminate other factors that are responsible for stock return and in the end, it will show only how stock return is influenced by exchange rate fluctuation. The same regression model was used by Jorion (1990), Bartov and Gordon (1994), Bartram (2004), and Doidge el at (2002) for the similar study. Rate of stock return for individual firm, rate change in exchange rate (pound sterling value), and rate of index return for FTSE-250 have been calculated using Microsoft Excel.

Regression analysis has been conducted individually for each firm and using average stock returns of 103 multinational for the whole population. To test the hypothesis combined regression result has been considered. As a result, this research is getting both firm specific exchange rate exposure and overall exposure for the whole sample.

Stock price has been considered as value of the firm. Based on the efficient market hypothesis (EMH), in an efficient market, stock price represents the position of the firm and any change in firms' position should be represented by its' stock price (Lo 2007). That is why, if there is any change in multinationals position because of their exchange rate exposure, it should be represented by its' stock price. UK capital market is an efficient market and it could be considered that sock price of any UK based company is one of the best indicators of firms' position or value. For these above reasons, stock price of the multinationals has been considered as their value.

Time period of this study is January 2005 to July 2010. Objective of this study is to clarify the impact of exchange rate (value of pound sterling) fluctuation on UK based multinationals' value. So far it is known that there is no previous study has done on UK based multinationals about this issue during this time frame. That is why; an in-depth study on impact of exchange rate fluctuation on UK based multinationals' value is providing some brand new findings. During this time period, there was a decent fluctuation in UK pound sterling value. As a result, this time period is clear enough to conduct this study rather than conducting the study on a long time period.

Figure 2: Exchange rate between British pound and US dollar from January 2005 to July 2010.



From the above figure, it is seen that there were three dimensions of pound sterling value against U.S. dollar during this time period. From January 2005 to around July 2006, value of UK pound sterling was moderate. Its' value started to grow up around from August 2006. And pound sterling was the strongest during the time period of around August 2006 to July 2008. From around August 2008 pound sterling started to depreciate and it was the weakest during the time period of September 2008 to around may 2010. One of the interesting issues of this time period is, while recession started to affect business, during that time pound sterling also started to depreciate. As, a result based on the theory, during the recession period (2008-2009), UK multinationals should get higher value due to pound sterling devaluation. This study is incorporating this interesting issue whether UK multinationals were able to get higher valuation during the recession period because of the depreciated value of the pound sterling.

To test the hypothesis, this study is considering the whole time period. Moreover, this time period has been divided into three parts based on appreciation and depreciation of pound sterling value to capture the UK multinationals' performance in response to appreciation and depreciation of pound sterling's value. Subdivided time periods for this study are:-

- Sub-period 1: From January 2005 to July 2006 (moderate value of pound sterling)
- Sub-period 2: From August 2006 to July 2008 (strongest value of pound sterling).
- Sub-period 3: From August 2008 to July 2010 (weakest value of pound sterling).

Average stock returns of 103 multinationals have been considered to test the hypothesis, but individual regression analysis has been conducted to identify individual exposure.

The first limitation of this methodology is that, the regression model of this research is not fully capable to capture to what extent firms are exposed to exchange rate exposure as it is only considering stock return. Secondly, this study has been conducted on multinationals listed with FTSE-250. Firms in FTSE-250 are well established and big multinationals. As a result, this sample is not capable to capture the behaviors of exchange rate exposure towards the small multinationals. However, it could be said that if well managed multinationals, like FTSE-250 listed multinationals get advantage or suffer because of exchange rate fluctuation, small multinationals will at least follow the trend of large multinationals. All the multinationals are not similarly exposed to exchange rate fluctuations. Multinationals that have significant amount of foreign assets and sales are more exposed to exchange rate fluctuation compared to the multinationals that have a very small portion of foreign assets and sales. Methodology of this study is not capable to distinguish these factors.

Instead of choosing multinationals from any particular index like FTSE-250, if all listed multinationals from London Stock Exchange are considered, there will not be any doubt about the aggregate outcomes. To some extent exchange rate affects domestic businesses because

domestic businesses compete with international businesses or they import raw materials/ machinery from international market for their production. That is why; the same methodology could be used to find out impact of exchange rate fluctuation on domestic business value. And in the end, comparison could be drawn in this context between domestic and international business. Moreover, if sector wise analysis is done on this issue, it will give a clear picture about which sectors are significantly exposed to exchange rate exposure. From the literature revive, it is seen that all the multinationals are not similarly exposed to exchange rate exposure. Multinationals that have more foreign sales/ assets are more exposed to exchange rate fluctuation. That is why; analysis could be done based on multinationals foreign sales/ assets. Export and import oriented businesses are not similarly exposed to exchange rate fluctuation. It could be research question whether export or import oriented business is getting higher valuation from home currency appreciation and depreciation (Pritamani el at 2004).

EMPIRICAL FINDINGS

To test the hypothesis, this paper has conducted an analysis on 103 UK based multinationals. Average stock return of 103 multinationals from January 2005 to July 2010 has been considered to test the main hypothesis. However, analysis has been done from different perspective to identify if there is any variation in findings.

First of all, hypothesis was tested by conducting a regression analysis based on the pre-specified regression model.

Table 1: Aggregated findings of 103 multinationals for the entire time period of the study (January 2005 to July 2010)

	Unstandardized Coefficients		Standardized Coefficients
	B	Std. Error	Beta
(Constant)	.009	.005	
Rate change in exchange rate	.037	.174	.003
Rate of return of FTSE-250 index	1.049	.090	.145

			95.0% Confidence Interval for B	
	t	Sig.	Lower Bound	Upper Bound
(Constant)	1.735	.083	-.001	.019
Rate change in exchange rate	.211	.833	-.305	.378
Rate of return of FTSE-250 index	11.650	.000	.872	1.226

Dependent Variable: Rate of stock return

Average stock return of 103 multinationals from January 2005 to July 2010 has been used to do the regression. From the above tables, it is seen that overall beta coefficient for 103 multinationals is 0.003. It is a positive value and denotes that depreciation in pound sterling value decreases the multinationals' value.

However, value of t-statistic at a 95% confidence level for exchange rate is 0.211. That means there is no significant relationship between changes in firm' value and rate change in exchange rate. This is why null hypothesis is accepted for this study and proves that there is no significant relationship between unexpected exchange rate fluctuation and firms' value. Moreover, it does not prove the theory that depreciation in pound sterling value increases the multinationals' value or an appreciation in pound sterling value decreases UK multinationals value.

Table 2: Aggregated findings of 103 multinationals from January 2005 to July 2006

	Unstandardized Coefficients		Standardized Coefficients
	B	Std. Error	Beta
(Constant)	.010	.012	
Rate change in exchange rate	.109	.501	.006
Rate of return of FTSE-250 index	1.139	.331	.089

			95.0% Confidence Interval for B	
	t	Sig.	Lower Bound	Upper Bound
(Constant)	.793	.428	-.014	.033
Rate change in exchange rate	.218	.827	-.873	1.092
Rate of return of FTSE-250 index	3.443	.001	.490	1.788

Dependent Variable: Rate of stock return

Average stock return from January 2005 to July 2006 (moderate value of pound sterling) of 103 multinational was taken to conduct regression analysis on the time period. The analysis shows a positive beta coefficient (βe) value (0.006) for exchange rate with an insignificant t-value (0.218).

Analysis on this time period proves that there is no significant relationship between exchange rate fluctuation and firms' value. It also signifies that theoretical analysis of exchange rate exposure and firm value does not exist in practice.

Table 3: Aggregated findings of 103 multinationals from August 2006 July 2008

	Unstandardized Coefficients		Standardized Coefficients
	B	Std. Error	Beta
(Constant)	.008	.011	
Rate change in exchange rate	.058	.763	.002
Rate of return of FTSE-250 index	.070	.265	.005

			95.0% Confidence Interval for B	
	t	Sig.	Lower Bound	Upper Bound
(Constant)	.792	.429	-.012	.029
Rate change in exchange rate	.076	.939	-1.438	1.555
Rate of return of FTSE-250 index	.263	.793	-.449	.588

Dependent Variable: Rate of stock return

Average stock return of 103 multinational from August 2006 to July 2008 (strongest value of pound sterling) was taken to conduct regression analysis. The analysis shows a positive beta coefficient (βe) value (0.002) for exchange rate with an insignificant t-value (0.076). From this part of the analysis, it can be concluded that there is no significant relationship between exchange rate fluctuation and firms' value. Moreover, it again accepts the null hypothesis, as t-statistics is insignificant.

Table 4: Aggregated findings of 103 multinationals from August 2008 July 2010

	Unstandardized Coefficients		Standardized Coefficients
	B	Std. Error	Beta
(Constant)	.010	.003	
Rate change in exchange rate	.172	.083	.041
Rate of return of FTSE-250 index	.914	.043	.419

			95.0% Confidence Interval for B	
	t	Sig.	Lower Bound	Upper Bound
(Constant)	2.947	.003	.003	.016
Rate change in exchange rate	2.076	.038	.009	.334
Rate of return of FTSE-250 index	21.252	.000	.829	.998

Dependent Variable: Rate of stock return

Pound sterling was the weakest during the time period of August 2008 to July 2010. Based on the theories, during the time period of August 2008 to July 2010 UK multinationals should get higher market value. But the regression analysis of average stock return of 103 multinationals

from August 2008 to July 2010 shows opposite results. Beta coefficient for this time period was 0.172 for exchange rate and there was a significant t-value (2.076). During this time period t-value indicates that there is a significant relationship between exchange rate and value of UK multinationals. A positive beta coefficient for exchange rate indicates that depreciation in pound sterling decreases UK multinationals value and appreciation in pound sterling increases the value of UK multinationals. This time period also covers the period of 2008-2009 financial crises. Based on the theory, UK multinationals should get advantage from weaker pound sterling value. But, findings from this period shows that gains (if any) from depreciated pound sterling value was not good enough for UK multinationals to cover their losses from financial crisis.

Firm Specific Exchange Rate Exposure of 103 UK Multinationals

To identify firm specific exposure of currency risk, regression analysis has been conducted separately on 103 UK multinationals using their stock returns from January 2005 to July 2010. However, in most of the cases it shows insignificant relationship between exchange rate fluctuation and change in UK multinationals' value.

From the regression analysis, it has been found that only 15 firms out of 103 are significantly (based on t-value) exposed to exchange rate fluctuation. That means around 85% UK multinationals do not have any significant relationship between pound sterling fluctuations and firm value. Only 6 firms out of 15, that have significant relationship between pound sterling fluctuation and firm value, have negative beta coefficient value. It can be concluded that around 6% multinationals have negative beta coefficient for exchange rate with significant t-value and around 9% multinationals have positive beta coefficient with significant t-value. From the findings of individual regression output of 103 UK based multinationals, it is seen that around 6% multinationals proves that depreciation of pound sterling value increases firms' value or appreciation in pound sterling value decreases firms' value. On the other hand, approximately 9% UK multinationals with significant t-value have positive beta coefficient. These 9% UK multinationals contradict with the theory that depreciation in pound sterling value increases the firms' value.

In conclusion, it can be said that approximately 85% UK multinationals do not have any significant relationship between pound sterling fluctuation and firm value. About 6% multinationals with significant t-value and negative beta coefficient accept the theory that depreciation in pound sterling value increases firms' value. Around 9% multinationals with significant t-value and positive beta coefficient for exchange rate contradicts with the theory.

OVERALL DISCUSSION

Insignificant relationship between pound sterling fluctuation and UK multinationals' value proves that, UK multinationals are capable enough to eliminate their exchange rate risk. That means, they are well managed to use derivatives to hedge exchange rate fluctuation or to use forward and future contract to protect them from the fall of product price that might occurs due to the exchange rate fluctuation. In addition, it also proves that depreciation of pound sterling value is not capable enough to compensate the loss that might occur due to the macroeconomics factors. During the period of credit crunch 2007-2009, pound sterling value started to depreciate against other currencies. And it was the lowest against US dollar during the period of August 2008 to July 2010. However, the regression analysis conducted on the period of August 2008 to July 2010, shows that value of UK multinationals went down in consistent with depreciated pound sterling value. But the theory suggests that, multinationals value should increase when home currency depreciates.

COMPARISONS WITH PREVIOUS FINDINGS OF THIS ISSUE

This is a debatable issue that depreciation in home currency value increases the value of multinational or export oriented business. Theoretical analysis on this issue is satisfactory enough to support this issue. However, in consistent with the findings of this study, empirical evidences suggest that value of home currency fluctuation is not always related to the change in firms' value. Moreover, it is also seen that multinationals value increases if home currency value increases and vice-versa.

Choi and Prasad (1995) said that exchange rate exposure/ fluctuation is one of the key determinants affecting firms' value in open economy. Contradict with their findings; this research finds that there is not any significant relationship between multinationals' value and exchange rate exposure from the context of United Kingdom. After analyzing 6000 US multinationals from 1984 to 1998, Bodnar et al (2003) found that in the first three year of operations when Dollar was strong, value impact of international diversification was positive. This research has identified that during the time period of August 2008 to July 2010, when pound sterling was weak value of the UK multinationals also went down.

Doukas et al (2001) found significant relationship between yen fluctuation and stock return of Japanese firms. They also mentioned that extensive use of foreign currency risk management and foreign currency derivatives proves that firms' value is correlated with exchange rate fluctuation. While, this paper is suggesting that multinationals are capable to eliminate their currency risk by using foreign currency derivatives and because of that there is no significant relationship between value of pound sterling and value of UK multinationals. Lee

and Suh (2008) found that US multinationals are not affected by exchange rate fluctuation because of the use of foreign currency derivatives. They also added that geographic diversification, sharing operating cost, expanding into other areas of the business, focusing more on domestic business during the period of currency appreciation, and moving business to more profitable segments etc. save multinationals from unfavorable exchange rate movements. Moran (2005) found that most of Chilean firms that are significantly exposed to currency risk and have a negative coefficient. That means depreciation in Chilean peso decreases the value of the firm. Contradict with Moran (2005), this paper does not find any significant relationship between UK multinationals value and exchange rate fluctuation. However, consistent with their findings, this paper also shows that when pound sterling depreciated (August 2008 to July 2010), value of UK multinationals also depreciated.

Doidge el at (2002) found that firms' international activities are broadly and significantly exposed to foreign exchange exposure and large firms are more exposed to exchange rate exposure than small firms. This research was conducted on UK based multinationals from FTSE-250. Undoubtedly, firms listed in FTSE-250 are large and well established. Contradict with Doidge el at (2002), this paper does not find any significant relationship between exchange rate and multinationals' value. Choi and Prasad (1995) found that about 60% of U.S. multinationals with significant exchange risk exposure gain from a depreciation of dollar. This research finds only around 6% of UK multinationals with significant exchange risk exposure gain from a depreciation of pound sterling.

CONCLUSION

It is a widely believed concept that exchange rate fluctuation can affect the value of the multinationals by changing the cash flow, assets and liabilities of foreign subsidiaries and financial obligations denoted in foreign currency (Shin and Soenen1998). This study has analyzed 103 UK based multinationals selected from FTSE-250. Multinational firms have been identified from FTSE-250, by studying their profile from London stock exchange, yahoo finance, by visiting their website and studying their annual reports. A two factor regression model proposed by Jorion (1990) has been used to analyze the data.

Aggregate result of 103 multinationals shows that there is no significant relationship between pound sterling fluctuation and UK multinationals value. T-value for this analysis was 0.221 with a beta coefficient of 0.003. Analysis of the time periods of January 2005 to July 2006 and August 2006 to July 2008 has shown similar results. These analyses have shown an insignificant relationship between pound sterling fluctuation and UK multinationals value. Analysis of the time period of August 2008 to July 2010 has shown a significant relationship

between pound sterling value and value of UK multinationals. But, beta coefficient of this time period was 0.041 that means depreciation in pound sterling value decreases the UK multinationals' value.

To get firm specific exchange rate risk exposure of 103 multinationals, 103 separate regression analyses were conducted for 103 multinationals. From this analysis it is seen that 85% of UK multinationals do not have any significant relationship between firm value and exchange rate fluctuation. Approximately 6% multinationals have negative beta coefficient for exchange rate with significant t-value and around 9% multinationals have positive beta coefficient with significant t-value. That means only 6% multinationals indicate that depreciation in pound sterling value increases the value of UK multinationals and vice-versa. On the other hand 9% multinationals with positive beta coefficient indicates that, depreciation in pound sterling value decreases the UK multinationals value and vice-versa.

LIMITATIONS AND FURTHER RESEARCH SCOPES

The first limitation of this study is that, this study is not capable to capture to what extent UK multinationals are exposed to exchange rate fluctuation, as it is only considering stock return. Secondly, this study has been conducted on multinationals listed with FTSE-250. Firms in FTSE-250 are well established and big multinationals. As a result, this sample is not capable to capture the outcomes of exchange rate fluctuation towards the small multinationals. Similar study can be conducted on domestic firms. And in the end it might give a good comparison between exchange rate exposure on domestic businesses and multinationals. All the multinationals are not similarly exposed to exchange rate fluctuations. Multinationals that have signification amount of foreign assets and sales are more exposed to exchange rate fluctuation compared to the multinationals have a very small portion of foreign assets and sales. This methodology is not capable to distinguish these factors. Further research could be conducted on this issue.

Instead of choosing multinationals from any particular index like FTSE-250, if all listed multinationals from London Stock Exchange are considered for the study, there will not be any doubt about the aggregate outcomes. Moreover, if sector wise analysis is done on this issue, it will give a clear picture, which sectors are significantly exposed to exchange rate risk. Export and import oriented businesses are not similarly exposed to exchange rate fluctuation. It could be research question who (export or import oriented business) is getting higher valuation from home currency appreciation and depreciation (Pritamani el at 2004).

This research was conducted on a developed country. Most of the previous researches has been conducted on multinationals or firms from developed countries. Similar study on

multinationals or firms from less developed countries might give differ outcomes. That is why, there is still research scope to conduct similar study on the multinationals from less developed and developing countries like India, Bangladesh, Uganda, Vietnam etc.

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APPENDIX

The table below shows beta coefficient value of exchange rate and t-statistics value for 103 multinationals.

Name of the multinationals	β_e	t-statistics
1. ABERDEEN ASSET MGMT (ADN.L)	-0.05	-0.463
2. AEGIS GROUP (AGS.L)	-0.076	-0.793
3. ASHTEAD GROUP (AHT.L)	-0.097	-1.102
4. AMLIN (AML.L)	-0.229	-1.916
5. WS ATKINS (ATK.L)	-0.018	-0.176
6. AVIS EUROPE (AVE.L)	0.118	1.069
7. BABCOCK INTL GRP (BAB.L)	0.008	0.072
8. BALFOUR BEATTY (BBY.L)*	-0.237	-2.386
9. BEAZLEY (BEZ.L)	0.163	1.336
10. BTG (BGC.L)	0.1	0.791
11. BODYCOTE (BOY.L)	0.156	1.59
12. BRITISH EMPIRE SEC (BTEM.L)	-0.068	-0.535
13. CLOSE BROS GRP (CBG.L)	-0.129	-1.167
14. CATLIN GROUP (CGL.L)	-0.101	-0.813
15. CHEMRING GRP (CHG.L)	0.076	0.664
16. CALEDONIA INV.ST.UN (CLDN.L)	0.146	1.372
17. CARILLION (CLLN.L)*	-0.175	-2.055
18. CARPETRIGHT (CPR.L)	0.193	1.672
19. CRODA INTL PLC (CRDA.L)	0.05	0.456
20. CSR (CSR.L)	0.078	0.655
21. CITY OF LON INV TR (CTY.L)	0.091	0.733
22. CABLE & WIRE COMM	-0.094	-0.758

23. DAIRY CREST GRP (DCG.L)	-0.089	-0.786
24. DAEJAN HOLD (DJAN.L)	-0.074	-0.612
25. DE LA RUE (DLAR.L)	-0.072	-0.565
26. DLY MAIL&GEN TST A (DMGT.L)	-0.093	-0.967
27. DOMINO PRINTING (DNO.L)	-0.059	-0.567
28. DANA PETROLEUM (DNX.L)*	0.237	2.096
29. DEVRO (DVO.L)	-0.167	-1.38
30. DAVIS SERVICE GRP (DVSG.L)	0.152	1.416
31. DIXONS RETAIL (DXNS.L)	0.008	0.073
32. ELECTROCOMPONENTS (ECM.L)	0.008	0.073
33. ELEMENTIS (ELM.L)	0.047	0.386
34. EUROMONEY INST INV (ERM.L)*	-0.217	-2.109
35. EASYJET (EZJ.L)	0.019	0.16
36. FIDESSA GRP (FDSA.L)	0.16	1.484
37. FENNER (FENR.L)*	0.222	2.358
38. FOREIGN&COL INV TST (FRCL.L)	-0.007	-0. 069
39. GREENE KING (GNK.L)	-0.152	-1.551
40. GENUS (GNS.L)	-0.062	-0.526
41. HAYS (HAS.L)	-0.089	-0.946
42. HALMA PLC (HLMA.L)	-0.038	-0.332
43. HOMESERVE (HSV.L)	0.206	1.795
44. HISCOX (HSX.L)*	-0.398	-3.736
45. HUNTING (HTG.L)	0.031	0.348
46. ICG (ICP.L)	0.021	0.188
47. IMAGINATION TECH GP (IMG.L)	0.053	0.459
48. IMI PLC (IMI.L)	-0.047	-0.641
49. INFORMA (INF.L)	-0.126	-1.513
50. ITE GROUP (ITE.L)*	0.223	2.274
51. ITV (ITV.L)	0.09	0.898
52. JD SPORTS FASHION (JD.L)*	0.271	2.284
53. JAR LLOYD THOMP GRP (JLT.L)	-0.217	-1.785
54. KESA ELECTRICALS (KESA.L)	0.051	0.587
55. LOGICA (LOG.L)	-0.12	-1.45
56. LAIRD (LRD.L)	-0.059	-0.657

57. LSE GROUP (LSE.L)	0.101	0.929
58. MORGAN CRUCIBLE CO (MGCR.L)	0.026	0.337
59. MEGGITT (MGGT.L)*	-0.225	-2.933
60. MILLENNIUM COP HOT (MLC.L)	0.014	0.109
61. MICHAEL PAGE INT (MPI.L)	-0.105	-1.179
62. MERCANTILE INV TR (MRC.L)	0.065	1.29
63. MELROSE RESOURCES (MRS.L)*	0.321	3.044
64. MISYS (MSY.L)	0.137	1.23
65. MOTHERCARE (MTC.L)	-0.048	-0.379
66. MURRAY INTERN TR (MYI.L)	-0.021	-0.16
67. NATIONAL EXP GRP (NEX.L)	0.072	0.692
68. NORTHUMBRIAN WATER (NWG.L)	0.076	0.595
69. PREMIER FOODS (PFD.L)	0.015	0.141
70. PROVIDENT FIN (PFG.L)	-0.169	-1.365
71. PREMIER FARNELL (PFL.L)	-0.066	-0.722
72. PACE (PIC.L)	0.065	0.618
73. PREMIER OIL (PMO.L)	0.188	1.724
74. PETROPAVLOVSK (POG.L)	0.082	0.717
75. RATHBONE BROTHERS (RAT.L)	0.061	0.145
76. RIT CAPITAL PARTN (RCP.L)	0.114	1.107
77. RANK GROUP (RNK.L)	-0.056	-0.444
78. RPS GROUP (RPS.L)*	0.246	3.001
79. RENISHAW (RSW.L)	0.07	0.692
80. RENTOKIL INITIAL (RTO.L)	0.132	1.283
81. SPORTINGBET (SBT.L)	0.01	0.085
82. STAGECOACH GRP (SGC.L)	0.005	0.046
83. SIG (SHI.L)	-0.074	-0.82
84. SOCO INTERNATIONAL (SIA.L)	-0.026	-0.207
85. SHANKS GROUP (SKS.L)	0.118	1.179
86. D S SMITH (SMDS.L)	0.019	0.223
87. SENIOR (SNR.L)	0.092	0.964
88. SPIRENT COMMUNICTS (SPT.L)	0.075	0.59
89. SPIRAX-SARCO ENGIN. (SPX.L)	-0.128	-1.299
90. SSL INTL (SSL.L)	0.007	0.061

91. SVG CAPITAL (SVI.L)*	0.342	3.405
92. SPECTRIS (SXS.L)	-0.071	-0.839
93. SYNERGY HEALTH (SYR.L)	0.151	1.354
94. TATE & LYLE (TATE.L)	-0.008	-0.067
95. THOMAS COOK GRP (TCG.L)	-0.027	-0.209
96. TEMPLETON EMERG MKT (TEM.L)	0.061	0.745
97. TAYLOR WIMPEY (TW.L)	-0.117	-1.396
98. ULTRA ELEC HLDGS (ULE.L)*	-0.243	-2.56
99. VICTREX (VCT.L)	0.05	0.473
100. WOOD GROUP (JOHN) (WG.L)*	0.207	2.038
101. YELL GROUP (YELL.L)	-0.061	-0.593
103. ULE CATTO & CO (YULC.L)*	0.229	2.232

*Firms with significant t-value.