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## Managing foreign exchange risk with derivatives in UK non-financial firms

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#### ABSTRACT

This study assesses the effect of derivatives use of large UK non-financial firms in their foreign exchange risk management activity and tests value relevance of FRS 13. Using a sample of FT UK 500 non-financial firms for 1999 when FRS 13 was implemented, we examine the foreign exchange risk exposure of the firm that is engaged in international business activities, and the effect of the use of foreign exchange derivatives on the firm's foreign exchange risk exposure. There is evidence that UK non-financial firms use derivatives to hedge against the risk of unfavorable exchange rate movements and the hedge is effective in reducing firms' risk exposure to varied degrees. The results support value relevance of FRS 13 that numerical disclosure of derivatives use by firms reveals important information to investors and helps firms reduce the cost of capital and increase firm value. © 2012 Elsevier Inc. All rights reserved.

#### 1. Introduction

On March 23, 1999, Financial Reporting Standard No 13 (FRS 13<sup>1</sup> thereafter) of the Accounting Standards Board in the UK came into effect. FRS 13 requires that listed firms disclose information on financial instruments from that time point and clearly state the related accounting policy. Firms must report their financial instruments at fair value and information on the credit and market risk of those instruments, with holding gains and losses being included in earnings. This mandated disclosure requirement is of valuable importance to research on firms' risk management with derivatives. Before FRS 13, it was not discernible between a firm that did not use derivatives and a firm that used derivatives but did not report the use of derivatives. Consequently, data collected on the derivatives use were subject to non-disclosure biases, the results in the effect of derivatives use could be distorted, and the conclusions could be inaccurate. As such the year 1999 is of particular importance in the disclosure of derivatives use in the UK. An examination of derivatives use and disclosure in 1999 is therefore beneficial to various stakeholders of the firm

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in the valuation of their investments and associated risks, as well as to researchers in the field in gaining insightful knowledge in the role of derivatives and derivatives use, the effect of derivatives use on firms' risk profiles, and value relevance of risk management disclosure. The implementation of FRS 13 enables us to retrieve the fair value of derivatives from financial statements and to answer the question "does the disclosed information helps investors and creditors assess the firm's performance and make their investment decisions?"

FRS 13 requires a range of disclosures that are, in most areas, consistent with those required in the US and by the IASB. Broadly, these disclosures may be divided into narrative and numerical information. The former is intended as an explanation of why the entity uses financial instruments, what it hopes to achieve and whether this is demonstrated by the latter in period-end numerical disclosures. The disclosure requirement of FRS 13 for narrative and numerical information on derivatives use is a response to the intensifying corporate use of derivatives in risk management practice over the last quarter century. The use of derivative financial securities opens a new channel to corporate financial management in an era of financial innovations, to the great effect of alternating and helping achieve desirable cash flow patterns. Prudently applied, it reduces risks in operations, leading to the reduction of risk in unlevered equity; it reduces risks in liabilities, leading to the reduction of risk in levered equity. Using available and relevant derivative financial instruments to manage and hedge against the exposure to foreign exchange and input/output markets has developed into a mandate, enforced upon the management of firms by financial regulatory authorities and various market and corporate governance mechanisms.

Exchange rate movements are a major source of uncertainty in multinational companies, which leads to the possibility of incurring

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<sup>&</sup>lt;sup>1</sup> While the ASB implemented IAS 32 (*Financial Instruments: Presentation*) as FRS 25 and IAS 39 (*Financial Instruments: Recognition and Measurement*) as FRS 26 (effective January 1, 2005), the IASB replaced IAS 32 and IAS 39 by IFRS 7 (*Financial Instruments: Disclosures*) in the course, which complemented the principles of IAS 32 and IAS 39. The UK implemented IFRS 7 with FRS 29 (effective January 1, 2007). Nevertheless, the disclosure requirements for the entities in this study are unchanged. In a certain sense, IFRS 7 is closer to FRS 13 than IAS 32 (FRS 25) and IAS 39 (FRS26).

exchange losses under unfavorable foreign exchange conditions. Many multinational companies nowadays resort to financial derivatives to reduce the adverse effect of foreign exchange exposure in their value enhancement activities. Nevertheless, the effect of derivatives use by firms in managing their foreign exchange risk is yet to be examined consistently in greater detail and with wider geographical coverage beyond the US, to which the present paper is dedicated. The task is particularly imperative for non-US studies for at least two major reasons. First, the vast majority of research on derivatives use by firms is in the US and with a US focus, i.e., the effect of derivatives use on US firms and from the point of view of the US interest. Though limited studies using non-US data have been conducted in the past few years, they are mostly descriptive and yet to toe the line of contemporary accounting and financial market research, which makes the comparison with the results and findings of US studies difficult. Such studies are short of being authoritative and illuminating. Second, while the US is a dominant force in many financial markets and activities, it is the UK, not the US, who houses the world largest OTC derivatives activity. According to the BIS, UK OTC derivatives activity is almost twice as enormous as that in the US, and exceeds all other major economies to a great extent.<sup>2</sup> The empirical literature in risk management and derivatives use that does not contain serious UK studies is incomplete.

The present study is therefore motivated to provide methodical test evidence on value relevance of risk management disclosure, against a background of the implementation of FRS 13 in March 1999 in the UK. Using a sample of FT UK 500 non-financial firms for the year of 1999, we test value relevance of FRS 13 to investors and firms, and examine empirically foreign exchange risk management of UK firms and the effect of derivatives use on firms' foreign exchange exposure. We conjecture theoretically that disclosure of numerical information on derivatives use in foreign exchange risk management possesses value relevance characteristics, and then test empirically the hypothesis that UK non-financial firms use derivatives to reduce their exposure to foreign exchange risk. By examining net foreign exchange exposure, this paper makes an important contribution to the literature whereas previous studies have examined either gross foreign exchange exposure or gross derivatives use. Specifically, the paper investigates foreign exchange exposure in a cross section of UK firms in an analytical framework of return determination for firms that are involved in foreign operations and are subjected to foreign exchange exposure. It then scrutinizes the contributors to foreign exchange exposure and the effect of derivatives use for the whole sample as well as for the positively exposed firms and negatively exposed firms respectively. Meanwhile, it makes a methodological contribution to the empirical literature. A simple but effective remedy is devised to infer and capture the missing element, which solves the controversy in the treatment of net importers' foreign exchange exposure in previous studies and makes improvement over them.

The remainder of the paper is organized as follows. The next section theorizes the effect of derivatives use in conjunction with a review of the empirical literature in risk management with derivatives. The third section describes our sample and data, and reports descriptive statistics. Whereas the test results of foreign exchange exposure of UK non-financial firms are presented next in Section 4 with further analysis of the relationships between foreign exchange exposure, foreign business activities and derivatives activities of UK non-financial firms. Finally Section 5 concludes this study.

#### 2. Risk exposure, derivatives use and the effect of derivatives use

There is a large set of literature in foreign exchange exposure and value relevance of derivatives use and disclosure. Indeed and more precisely, there are two rather unique sets of literature, with one being concerned with foreign exchange exposure and the other examining value relevance of derivatives use and disclosure. Dominguez and Tesar (2006) study exchange rate exposure and its effect on firm value. They further scrutinize the association between exchange rate exposure and firm characteristics and find firm size, multinational status and foreign sales are, among others, contributing factors to exchange rate exposure. Tai (2008) finds that more than half of US industries and the majority of US banks are asymmetrically exposed to exchange rate risk. Pritamani, Shome, and Singal (2004) propose a hypothesis that firms are affected by both the domestic economy and foreign markets. They claim that the effects of the domestic economic factors and foreign market factors on firms' foreign exchange exposure are offsetting for exporters and additive for importers. They make use of their proposed hypothesis and hypothesis tests to offer explanations to the finding of multinational corporations' insignificant exposure to foreign exchange risk in the existing literature, overlooking the offsetting effect or hedging role of currency derivatives. On the other hand, Allayannis and Weston (2001) test the relationship between the use of foreign currency derivatives and Tobin's Q as a proxy for firm value. They find that user firms possess a Q that is significantly higher than that of non-users at the 1% significance level. Their multivariate tests also detect a positive and significant association between the use of derivatives and Q. Similarly, the results documented in Venkatachalam (1996) suggest that disclosed fair values of derivatives help explain cross-sectional differences in bank stock prices. Testing for the association between the choice of hedging techniques and firms' characteristics, Joseph (2000) indicates that UK firms utilize a narrow set of techniques to hedge exposure. In evaluating UK banks' reporting practice, Woods and Marginson (2004) point out the problems in utilizing information on derivatives use. Their findings suggest that the narrative disclosures are generic, whereas the numerical figures are incomplete and not always comparable. Judge (2006) suggests that firms hedge primarily the expected costs of financial distress. Foreign sales are found to be one of the important contributing factors for firms to hedge. The paper falls short to measure risk exposure and estimate the effect of hedging activities of firms though.

While the motivations for, and the determinants of, corporate use of financial derivatives have been relatively thoroughly investigated over the last two decades,<sup>3</sup> the impact of financial derivatives use on firms' risk exposure has only recently become a subject for empirical investigation and the research remains sporadic. Schrand (1997) is among the first to examine the issue in an analytical framework of return determination that augments the traditional CAPM with multi-source risks - foreign exchange risk and/or interest rate risk in addition to market risk. The underlying assumption is that there are cross-sectional variations in risk exposure among firms, arising from the (varied) use of financial derivatives in risk management and hedging. Using a sample of 57 savings and loan associations for the period of 1984–1988, Schrand (1997) alleges that derivatives activities are positively related to the low interest rate sensitivity of stock prices. Examining the association between derivatives use and foreign exchange exposure, Allayannis and Ofek (2001) find evidence from a sample of S&P 500 non-financial firms for 1993 that the use of derivatives significantly reduces firms' foreign exchange

<sup>&</sup>lt;sup>2</sup> BIS (Bank for International Settlements, 2001, March) Quarterly Review's derivatives statistics and Triennial Surveys 2001, 2004 and 2007. Mallin, Ow-Yong, and Reynolds (2001) report of a survey on the use of derivatives of a large sample of UK non-financial corporations, the instrument used by 48% of the firms in the sample to manage exchange-rate risk was forwards, so OTC derivatives, in particular forwards, are the most common derivatives used by non-financial firms in managing foreign exchange risk.

<sup>&</sup>lt;sup>3</sup> These may or may not lead to optimal hedging. See, among others, Stulz (1984), Smith and Stulz (1985), Block and Gallagher (1986), Wall and Pringle (1989), Nance, Smith, and Smithson (1993), Froot, Scharfstein, and Stein (1993), DeMarzo and Duffie (1995), Mian (1996), Tufano (1996), Géczy, Minton, and Schrand (1997), Goldberg, Godwin, Kim, and Tritschler (1998), Gay and Nam (1998), Howton and Perfect (1998), Horng and Wei (1999), Whidbee and Wohar (1999), Guay (1999), and Guay and Kothari (2003).

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