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A re-examination of exposure to exchange rate risk: The impact of earnings management and currency derivative usage

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ABSTRACT

In an attempt to explain the weak evidence of priced exchange rate risk, we hypothesize that in addition to currency derivative usages, earnings management serves as another factor contributing to a reduction in exchange rate exposure. Our evidence reveals that earnings management activities, particularly those undertaken for the purpose of income smoothing, significantly reduce firm-specific exchange rate exposure, and that such role is particularly important if appropriate currency derivative instruments are limited. These results complement prior attempts to explain the puzzle of unpriced exchange rate risk. The investigation also highlights the importance of recognizing different managerial purposes behind discretionary accruals.

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1. Introduction

Firms are exposed to exchange rate risk that is inherent in their normal course of business. Unexpected or even anticipated fluctuations in foreign exchange rates affect firm cash flows, earnings, and therefore market value. Although such an argument can be theoretically applied to a broad range of US corporations, including multinationals, exporters and importers, as well as purely domestic companies, the empirical studies have only found limited success in uncovering consistent and significant pricing of exchange rate risk for US stocks.[1] A primary explanation for such weak evidence is that firms can minimize their exposure to such risk through hedging,[2] with the empirical results of recent studies having corroborated this argument.[3]

On the other hand, the impact which currency risk has on stock returns is ultimately dependent on the perceptions of investors of such impact on the reported earnings of a firm, which may, in turn, be manipulated by managers.[4] Many studies indeed suggest that in practice, earnings management is used as a tool to buffer against various types of economic shocks to the operating performance of the firm.[5] This study therefore sets out to uncover evidence to show that, in addition to the use of currency derivatives, the application of accounting techniques serves as another means of buffering exchange rate shocks for stock returns. Although the prior research has advanced our understanding of the ways in which foreign currency hedging activities can mitigate exposure to exchange rate risk, the specific impacts of earnings management have yet to be empirically explored.

This study starts by analyzing the hedging activities of US firms using firm disclosure of unrealized gains/losses on derivative transactions as a proxy indicator of a firm's currency derivative usage. We then reaffirm the results of prior studies, that the use

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[1] Examples include Jorion (1990), Bodnar and Gentry (1993), Amihud (1994), Bartov and Bodnar (1994), Chamberlain et al. (1997), Griffin and Stulz (2001), Faff and Marshall (2005) and Doidge et al. (2006).

[2] In addition to the employment of hedging instruments, alternative explanations for the insignificance of firm-specific exchange rate exposure are: (i) international trade, and thus, currency shocks, may be unimportant to the profits of US firms (Faff and Marshall, 2005); (ii) such insignificance may be attributable to the inefficiency of stock prices in response to exchange rate changes (Bartov and Bodnar, 1994; Bodnar and Wong, 2003; Dominguez and Tesar, 2006); (iii) sample selection bias (Bartov and Bodnar, 1994); and (iv) the possibility that exchange rate shocks are simply not economically important for shareholders, since they may diversify their exchange rate risk through their portfolio holdings (Modigliani and Miller, 1958).

[3] See for example Allayannis and Ofek (2001), Allayannis et al. (2001), Kim et al. (2006), Bartram (2008) and Bartram et al. (2010).

[4] Bartov and Bodnar (1994) and Sribunnak and Wong (2006) imply that the accuracy in estimating exposure to exchange rate risk depends on the accuracy of the information disclosed in financial reports.

[5] Examples include Lambert (1984), DeFond and Park (1997), Barton (2001), Pincus and Rajgopal (2002) and Leuz et al. (2003).

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of currency derivatives significantly reduces firm-specific exposure to exchange rate risk. In particular, even with controls in place for the earnings management factors, users of currency derivatives still experience an average of 0.51–0.94% less impact on their stock returns from a 1% change in the dollar exchange rate, as compared to non-users.

We next proceed to examine our main hypothesis on the impact of earnings management on a stock's exchange rate exposure. This approach considers that earnings management could take place in a variety of forms, each of which may have different effects on earnings, and thus, on stock prices. Following the study by Leuz et al. (2003), we employ four measures to capture various dimensions along which managers use their discretion to manage reported earnings. A two-stage least squares (2SLS) estimation is applied to control for the endogeneity between exchange rate exposure and the risk management decisions. Our results show that earnings management activities, particularly those undertaken for income smoothing, provide an additional tool for reducing the exposure of stock returns to exchange rate risk. Even for firms already using currency derivatives for hedging, earnings management practices can further contribute to the reduction in stocks' exposure to currency risk.

All of the relationships observed in the firm-specific exposure to exchange rate risk, with regard to use of currency derivatives and earnings management, are robust to alternative sample periods, to industry-adjusted exchange rate exposures, and to exposures estimated with various dollar indexes. In addition, to verify the legitimacy of the proxy indicator for currency derivative usage, we further apply hand-collected data of reported currency derivative usages over S&P500 firms, and the conclusion remains the same.

Our evidence of the effects of earnings management nevertheless shows that the measure assessing the magnitude of discretionary accruals does not have the same success as the remaining three earnings management measures. We argue that such result is attributable to the different purposes which discretionary accruals may serve. That is, more aggressive use of discretionary accruals may instead promote greater earnings volatility and exchange rate exposure when the managerial objectives behind those discretionary accruals are different from income smoothing (Bartov and Mohanram, 2004; Bergstresser and Philippon, 2006). Empirical exploration within this study does provide evidence to corroborate the argument that the exercise of discretionary accruals effectively reduces the exposures to exchange rate risk only when it works in line with earnings smoothing.

Last, we attempt to provide a better understanding of whether earnings management has any distinct role to play in reducing the currency risk exposure of stock returns which is not offered by the currency derivative usages. Given that foreign currency derivatives are more readily available for major currencies, we hypothesize that when the primary purpose is to reduce stock return exposure to non-major currencies, earnings management practices may become a more effective device than the use of currency derivatives. Our empirical tests provide results consistent with this hypothesis.

To summarize, this paper provides the following contributions to the existing literature. First of all, the literature has offered various explanations for the lack of strong evidence of priced exchange rate risk; however, the most pursued reason by researchers is that managers adopt financial and operational hedging and thus the exchange rate exposure of stock returns is reduced (e.g., Allayannis and Ofek, 2001; Allayannis et al., 2001; Kim et al., 2006; Bartram et al., 2010). This paper contributes to this area of the extant literature insofar as, after taking into consideration the direct impacts arising from the use of currency derivatives and controlling for operational hedging, we provide new evidence to show that earnings management significantly reduces the exposure of stock returns to exchange rate risk.

To the best of our knowledge, our paper is the first to apply earnings management in an attempt to resolve the long-standing puzzle within the extant literature on the pricing of exchange rate exposures.[6] Such evidence on the effects of earnings management on exchange rate exposure also provides useful insights for investors; when assessing the firm's exposure to exchange rate risk, if earnings management is found to be at work, then investors should consider the impact of currency risk on the firm's cash flow.

Secondly, we point out the importance of considering multiple dimensions of earnings management activities in assessing their consequences on firm risk. This issue was not addressed by previous researches studying earnings management as effective risk management tools.[7] In our efforts to resolve the puzzling results associated with the earnings management measure estimated with the modified Jones model, we indicate that this measure has limitations in terms of its ability to distinguish between the different managerial purposes behind the use of discretionary accruals; these different purposes may have quite different consequences on firm risk. Only those discretionary accruals which achieve income smoothing can serve as an effective tool for reducing the exposure of stock returns to currency risk. This clarification offers another contribution to the literature, since it highlights the need to recognize the limited role potentially played by each of the earnings management measures.

Finally, we specifically identify the circumstances under which earnings management exhibits advantages over the use of financial currency derivatives (FCDs) in controlling exchange rate exposure. In particular, we argue that firms are faced with different sources of currency risk, and find that earnings management serves a more important role when firms are exposed to risks from currencies for which derivatives for hedging may be unavailable.

The remainder of this paper is organized as follows. We develop our research hypotheses in Section 2, followed in Section 3 by a description of the methodology used in this study for measuring firm-specific exchange rate exposure and earnings management. The descriptive statistics are reported in Section 4, whilst Section 5 examines the effects of the currency derivative usages and earnings management on exchange rate exposure, and explores the puzzling relationship between discretionary accruals and exchange rate exposure. In Section 6, we analyze the role of earnings management when there is only limited availability of appropriate currency derivatives. Section 7 concludes.

2. Research hypotheses

Exchange rate changes are considered as an important source of risk for US corporations, with such exchange rate fluctuations affecting the expected cash flows and reported earnings of firms, and their market value. Nonetheless, the empirical evidence on

[6] Several studies examine the roles played by the use of derivatives and earnings management in controlling the volatility of earnings (Petersen and Thiagarajan, 2000; Barton, 2001; Pincus and Rajgopal, 2002). Their objective is to examine whether the use of derivatives served as an effective substitute for discretionary accruals. Our study differs from these prior studies, with regard to motivation and contributions, insofar as we focus on the management of exchange rate risk, with our primary objective being to resolve the long-standing puzzle in the extant literature with regard to the lack of evidence on priced exchange rate risk. We also present evidence that earnings management serves as an alternative viable risk management device that complements derivative usages. Another difference lies in the methodology adopted in the present study, with multiple measures of earnings management being applied in the tests.

[7] For example, Barton (2001) uses discretionary accruals estimated from the modified Jones model – which corresponds to our EM_{DAC} – as the single proxy for income smoothing. Pincus and Rajgopal (2002) apply a single income smoothing ratio, the 'standard deviation of earnings before abnormal accruals to the standard deviation of reported earnings'– a measure similar to our EM_{smooth} – to capture the direct effects of abnormal accruals on income smoothing.

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