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## A primer on the exposure of non-financial corporations to foreign exchange rate risk

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### Abstract

In the presence of deviations from parity conditions such as purchasing power parity and the international Fisher effect, non-financial corporations are confronted with risks stemming from the impact of unexpected exchange rate changes on the value of the firm, especially in the short- and the medium-term. The motivation for this paper stems from the authors' dissonance with both the existing academic literature and observed corporate practice, where too much emphasis is placed on either financial assets or hedging instruments, or forecasting rates in the latter case. This paper analyzes the economic exposure of non-financial firms, focusing on cash flows. In this context, issues such as the dimension of pass-through time and other complexities of exposures are explicitly addressed and such considerations in turn are linked to hedging decisions. The role of the competitive environment is stressed and related to analytical concepts such as currency of denomination and currency of determination. Finally, the complexity of the trade-off between financial and operative hedges is emphasized. The overall objective is to pull together diverse strands of the existing academic literature into a clear conceptual framework with the ultimate aim of improving managerial decision-making. © 2005 Elsevier B.V. All rights reserved.

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## 1. Introduction

Foreign exchange rate changes represent an important source of risk for non-financial corporations. Spectacular losses or even bankruptcies over the last decade and longer have drastically demonstrated the consequences of unprofessional management of these risks.<sup>1</sup> With the emergence of large currency blocs with their own, internally focused macro-economic policies, together with the parallel rise in the international involvement of firms (usually referred to as “globalization”), and the opening of markets through more liberal trade policies and the technology-driven reduction in transportation costs, the number of firms impacted directly or indirectly by exchange rate changes has dramatically grown.

Corporate foreign exchange risks began to attract widespread attention during the 1970s when the Bretton Woods system of fixed exchange rates unraveled. The subsequent rise in volatility of exchange rates and interest rates fostered a burst of financial innovation, exemplified by the proliferation of derivative instruments and their increasing use by corporations in all industry sectors (see e.g., Bartram et al., 2004; Bodnar et al., 1998). Derivatives can be quite efficient hedging instruments for corporate risk management. Nevertheless, they can be quite complex as well, with strong leverage effects. Consequently, the use of these instruments carries with it high risks – both for the unsophisticated user, as well as for executives tempted by gambling with their shareholders’ money. In contrast, when properly used for hedging, derivatives or various other financial transactions can reduce those risks of non-financial firms for which they are not rewarded in the market. Since the term “hedging” is widely misused in practice, a clear conceptual foundation is key to management action consistent with the objective of firm value maximization.

Hedging requires first and foremost an understanding of the underlying risk position: it means creating a position to offset an exposure. A hedge can be implemented either in the cash market or with derivatives. In contrast, “speculation” means taking actions in view of an explicit or implicit forecast that deviates from that of the market (as revealed, for example, by forward rates or interest differentials in functioning markets). In other words, a good test of whether an action involves hedging or speculation is the presence or absence of a causal relationship to the underlying exposure of the firm. This consideration focuses the agenda firmly on the definition and estimation of the exposure of firm value due to unexpected exchange rate changes. Here is where problems begin: the literature offers three definitions of exposure, namely accounting, transaction and economic (or “cashflow”), but only the latter is consistent with financial theory.

The use of alternative measures such as accounting or transaction exposure is largely prompted by management incentive issues (e.g., bonuses are paid on the basis of reported

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<sup>1</sup> To illustrate, exchange rate losses on its European sales were identified as the largest factor in a 16 billion Yen operating loss of the Japanese carmaker Mazda in 2001. In the same year, Toyota reported a 2.5 billion Yen operating loss in Europe, indicating that the current Euro exchange rate against both the Yen and Sterling meant Toyota’s European operations would not return to profitability in the near term. Similarly, the profits of the European aerospace and defense group EADS were wiped out in the year 2000 by a Euro 1.4 billion currency hit. And Uniwear, a Belgian group that specializes in hosiery, announced that its 39.5% plunge in profits in 1998 (to 20 billion Belgian Franc) was mainly due to losses on Sterling and Dollar exchange rates.

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