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## The effects of fair value reporting on corporate foreign exchange exposures



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### ABSTRACT

We analyze the effects of fair value reporting standards (FVR) SFAS 133 and IAS 39 on foreign exchange (FX) exposures of U.S. multinational firms. We observe reductions in FX exposures to developed market currencies that coincide with the implementation of FVR. Risk reductions mainly affect U.S. multinational firms and to a much lesser extent matched control groups of domestic firms. For firms with exposures to emerging market currencies, we observe no changes in positive FX exposures but substantial shifts in negative exposures resulting in a change of exposure direction. Additionally we report changes in FX exposure asymmetry affecting multinational and domestic firms. Observed results are robust to several alternative model specifications and are unlikely explained by the launch of the euro, changes in firm-level FX exposure determinants, the rise and decline of technology shocks, shifts in systematic risk factors, or the Asian Financial Crisis.

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## 1. Introduction and motivation

Fair value reporting (FVR) standards SFAS 133 and IAS 39 require firms to report financial derivatives at their fair market values.<sup>1</sup> Evidence suggests that the accounting treatment of financial derivatives can distort managers' decisions. Experiments demonstrate that individuals forgo sound hedging policies in the presence of FVR (Chen et al., 2013). Suboptimal hedging behavior is also reported by survey results (Glaum and Klöcker, 2011; Lins et al., 2011) and anecdotal evidence (McKay and Niedzielsky, 2000; Osterland, 2000). Theoretical work by Sapra (2002) illustrates that FVR can even induce speculation, and Beisland and Frestad (2013) show that FVR induces firms to use suboptimal myopic hedging strategies.

However, arguments regarding SFAS 133 and IAS 39 are far from one-sided. Zhang (2009) claims that the introduction of SFAS 133 pushed ineffective hedger/speculator firms to use financial derivatives more prudently. Her study documents post-FVR decreases in risk exposures to interest rates, commodity prices, and FX rates for ineffective hedger/speculator

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<sup>1</sup> Both SFAS 133 and IAS 39 require that: 1) all derivatives must be reported at fair value in financial statements, 2) changes in market value of derivatives not designated as hedging instruments must be recognized in net income, 3) changes in the market values of derivatives that qualify as designated hedges are recorded in net income or as other comprehensive income (an equity account), 4) changes in the market values of hedged items must also be recognized in net income, and 5) the ineffective portion of changes in market value of designated hedges must be included in net income.

firms, but not for effective hedgers. Decreases in FX exposures are also reported by [Richie et al. \(2006\)](#).<sup>2</sup> Additional positive effects of FVR are described by [Ahmed et al. \(2011\)](#), who find that SFAS 133 improves the relevance of accounting measures of derivative risk exposures for bond investors and lowers banks' costs of capital. Further, analytical work by [Melumad et al. \(1999\)](#) demonstrates that the presence FVR leads to a better outcome for long-term and future shareholders.

Shifts in corporate risk management resulting from the introduction of FVR could affect the foreign exchange (FX) exposure of U.S. multinational corporations (MNCs) ([Glaum and Klöcker, 2011](#); [Lins et al., 2011](#)). However, fair value reporting, potential distortions in currency risk management and the role of foreign currency derivatives are pieces of a larger puzzle. FX exposures of MNCs are complex and can be managed with a combination of tools ([Bartram et al., 2010](#)). MNCs commonly employ currency derivatives to hedge FX exposures ([Bodnar et al., 1998](#)), foreign currency denominated debt ([Aabo, 2006](#); [Keloharju and Niskanen, 2001](#)), operational hedging ([Pantzalis et al., 2001](#)), and FX pass-through ([Bodnar et al., 2002](#); [Korhonen and Wachtel, 2006](#)). Whether FVR has significantly altered the FX exposure of MNCs depends on the relative importance and success of derivative-based hedging, as well as the use and effectiveness of non-derivative-based risk management.

The papers most closely related to ours are [Richie et al. \(2006\)](#) and [Zhang \(2009\)](#). Compared to the two studies, we do not attempt to explicitly capture the firms' use of currency derivatives; rather, we attempt to study changes in FX exposures for a much broader cross section of U.S. MNCs. We choose this path for two reasons. First, the limited availability of firm-level derivatives usage data reduces samples to relatively small subsets of MNCs.<sup>3</sup> Second, shifts in corporate FX exposures can also be affected by the use of largely unobservable non-financial hedging strategies and shifts in managerial risk-taking, both of which could have been affected by the introduction of FVR.

It is also important to recognize that confounding events could also have affected FX exposures around the same time that FVR was introduced. Although it is impossible to control for all confounding events, we explicitly address the launch of the euro, changes in firm-level FX exposure determinants, the rise and decline of technology shocks, shifts in systematic risk factors, and the Asian Financial Crisis. In addition to robustness tests, our core research design employs a matched-portfolios approach toward MNCs and control groups of domestic corporations (DCs). This further improves the ability of our study to distinguish between FVR-related exposure changes on MNCs and confounding effects that affect all U.S. firms.

This paper expands existing literature in several important ways: 1) we investigate a broad cross section of U.S. MNCs and DCs allowing us to distinguish between small-, medium-, and large-sized firms; 2) in addition to its effects on FX exposure, we analyze the effects of FVR on FX exposure asymmetry; 3) we analyze FVR effects across different major industry groups; 4) we distinguish between FX exposures to emerging market and developed market currencies; and 5) we control for confounding effects by matching MNCs with samples of DCs. Further, we explore the effects of the Asian Financial Crisis, the introduction of the euro, the rise and fall of technology stocks, shifts in systematic risk factors, and the turbulent market events during 2000 and 2001 on our results.

We find that the introduction of FVR coincides with a reduction in FX exposures to developed market currencies for subsamples of small, medium, and large MNCs. No reductions in FX exposures to developed market currencies are observed in matched control groups of DCs. We find no changes in currency risk of firms with positive exposures to emerging market currencies. However, we observe substantial changes in currency exposures for firms with negative FX exposures to emerging market currencies — for these MNCs, FX exposures shift from being negative in the pre-FVR period to being positive in the post-FVR period. Additional tests reveal changes in FX exposure asymmetry affecting samples of MNCs and DCs alike.

This study proceeds as follows. Section 2 presents related theory on FVR and its potential effect on corporate FX exposures. In section 2 we also develop the research hypotheses. Section 3 describes the sample selection process, the methodologies used to estimate FX exposures, and the measures of changes in FX exposures to developed and emerging market currencies. In Section 4 we present and discuss the empirical results. Section 5 concludes this paper.

## 2. Hypotheses development and related literature

The introduction of FVR could have impacted corporate FX exposures of U.S. MNCs in several ways. One possibility is that the introduction of FVR has increased corporate FX exposures as a result of reduced currency risk management. Survey results presented by [Bodnar et al. \(1998\)](#) document that 27% of U.S. sample firms altered their use of foreign currency derivatives during the early implementation stage of SFAS 133.<sup>4</sup> More recently, in a survey of corporate CFOs from 36 countries, [Lins et al. \(2011\)](#) find that 42% of companies that hedge FX exposures have substantially decreased their hedging with foreign currency derivatives. Similar behavior is reported by [Glaum and Klöcker \(2011\)](#) for a sample of Swiss and German firms.

<sup>2</sup> An empirical study by [Singh \(2004\)](#) finds no significant decline in the use of derivatives and no significant differences in earnings volatility, cash flow volatility, and income after the implementation of SFAS 133.

<sup>3</sup> For example, [Richie et al. \(2006\)](#) study 422 U.S. MNCs that primarily operate in Europe. To overcome potentially offsetting FX exposures to multiple currencies, their analysis focuses on the euro. Similarly, [Zhang \(2009\)](#) studies the changes in economic exposures of 225 firms that started new derivatives programs between 1996–1999.

<sup>4</sup> According to [Bodnar et al. \(1998\)](#) the most common reported changes to the use of foreign currency derivatives were: 1) a change in types of foreign currency derivatives used, 2) a reduction in the use of derivatives, and 3) a change in the timing of hedging transactions.

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