

Emerging market exchange rate exposure

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Abstract

We estimate the exposure of emerging market companies to fluctuations in their domestic exchange rates. We use an instrumental-variable approach that identifies the total exposure of a company to exchange rate movements, yet abstracts from the influence of confounding macroeconomic shocks. In the sub-period of 1999–2002, we find that depreciations tend to have a negative impact on emerging market stock returns. In the sub-period of 2002–2006, this tendency has largely disappeared. Since we estimate the exchange rate exposure of firms from different countries with a common set of instruments, we can make coherent, cross-country comparisons of their determinants. We find that the impact of various measures of debt on exchange rate exposure, which is negative and significant in the early sub-period, becomes insignificant and even reverses sign in the recent sub-period.

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1. Introduction

In this paper we estimate the impact of domestic exchange rate movements on the stock market valuations of firms in emerging markets. We are interested in examining exchange rate exposure across different countries as well as the distribution of exposure within countries. We find that emerging market exchange rate exposure has changed within the last few years. In the immediate aftermath of the emerging market crises of the late 1990s (from 1999 to 2002), the share values of most emerging market firms were negatively affected by exchange rate depreciations. In the more recent years (2002–2006), we find that this negative exposure has disappeared.

Previous studies on developed markets typically focus on measuring *marginal* exchange rate exposure – the

impact of an exchange rate depreciation on a firm's stock return, controlling for the return on the national stock index. The inclusion of the national stock index is to control for the confounding effects of macroeconomic shocks, which can lead to simultaneous movements in the local currency and a firm's stock price. This measure is typically used to assess the exchange rate exposure of certain interesting classes of firms (such as multinationals or exporters) *relative* to the national average.

Yet, for emerging market firms, there are important reasons for us to focus instead on how they are affected by exchange rate fluctuations in *absolute* terms. First, from a macroeconomic perspective, we are interested in assessing whether emerging market firms as a class are negatively affected by exchange rate devaluations, not just how they perform relative to their respective country averages. Second, Morck et al. (2000) documented that the within-country correlation of stock prices is substantially higher for emerging than for developed markets. Such strong intranational co-movements suggest that there are likely to be important country-specific components in exchange rate

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exposures. Using measures of total exposure, we can identify any such country-level, macroeconomic determinants of exchange rate exposures; with only measures of marginal exposure, any country-specific effects are already subtracted out and thus unidentifiable.

To measure exposure at the national level, we need to distinguish between the direct effects of exchange rate movements on firm value, and the effects of other macroeconomic shocks that simultaneously affect both firm value and exchange rates. Because of the small size of any individual emerging market, its impact on the global financial market is limited. For this reason, we can treat world financial variables as exogenous to the emerging markets' macroeconomic conditions. Specifically, we use variables such as the US Fed Funds rate, and the yen-dollar and euro-dollar cross-rates as instruments to identify the direct effects of exchange rate movements on firm value. Because we identify the exchange rate exposure for all firms using a common set of instruments, we can make coherent comparisons of the exchange rate exposure of firms in different countries.

In a sample of 900 emerging market firms examined over the period 1999 through 2006, we find that the response of stock prices to exchange rate depreciations is mostly negative. On average, a 1% depreciation in the exchange rate is associated with a 0.4% decrease in stock price. There are about twice as many firms that have statistically significant and negative exposure as would be expected if there was no relationship between exchange rates and stock prices. However, these results for the full sample mask the changes in exchange rate exposure that have been occurring over time. Between 1999 and 2002, immediately following the various emerging market crises of the 1990s, we find that a 1% depreciation is associated with a 0.9% decrease in stock price, and about three times as many firms had significantly negative exposure as one would expect from a random sample. This finding is consistent with the phenomenon that numerous authors refer to as "liability dollarization".²

By contrast, between 2002 and 2006, we find little evidence of negative exposure. On average, a 1% depreciation is associated with a 0.1% *increase* in stock prices. Further, there no longer seems to be a negative relationship between exchange rate exposure and debt (international or otherwise) at the firm or national level. In fact, in this recent sub-period, we find that depreciations are more likely to lead to *increases* in firm value in countries with substantial foreign debt. As we argue below, this finding is consistent with there being a greater dependence of emerging market firms

on their domestic bond markets, and more opportunities for hedging through better-developed derivatives markets.

The paper is organized as follows. Section 2 briefly reviews the current literature. Section 3 estimates the total exchange rate exposure using an instrumental-variable approach. Section 4 investigates the determinants of exposure. Section 5 concludes.

2. Related literature

Beginning with the works of Adler and Dumas (1980, 1984), Dumas (1978), and Hodder (1982), there is a long list of studies that examine the exchange rate exposure of companies in developed markets. The main focus of this literature is to estimate exposures at the firm or industry level, and then investigate their determinants. For example, Jorion (1990) and He and Ng (1998) found foreign sales to be an important determinant of exposure for US and Japanese multinationals. Allayannis and Ihrig (2001) and Bodnar et al. (2002) investigated the role of market structure as a determinant of exchange rate exposure. Allayannis and Ihrig established the link between exchange rate exposure and markup, and estimated their model on US manufacturing industries. Bodnar, Dumas, and Marston related an exporting firm's exchange rate exposure with the extent to which it "passes through" exchange rate changes to prices, and estimated their model on Japanese export industries. Griffin and Stulz (2001) and Williamson (2001) examined the industry level competitive effects of exchange rate movements. Griffin and Stulz found that these effects were small for a broad set of industries in Canada, France, Germany, Japan, the UK, and the US. Williamson found stronger effects for the automotive industry in Japan and the US. Doidge et al. (2006) and Dominguez and Tesar (2006) provided more detailed reviews of this literature.

In terms of methodology, many studies, including the works of Allayannis and Ofek (2001), Bodnar and Gentry (1993), Jorion (1990, 1991), and Williamson (2001), measure exchange rate exposure using the domestic market index as a control variable. Bodnar and Wong (2003) provided a careful discussion of the motivation for this approach, and further showed that the construction of the market control variable can have a substantial influence on the sign and size of the exposure estimates.

A few studies examine the exchange rate exposure of some individual emerging markets at the firm or industry level. Kho and Stulz (2000) studied the currency exposure of the banking sector in five East Asian countries during the Asian financial crisis. They found that currency depreciations had a negative impact on the sector's stock returns only in Indonesia and the Philippines. Dominguez and Tesar (2006) found that the majority of Thai firms in their sample have a negative exposure to a local currency depreciation. Parsley and Popper (2006) studied how exchange rate pegs influenced the exchange rate exposure of Asia-Pacific firms, and found that countries with a fixed

² Hausmann et al. (2001) constructed several indicators that measured the ability of a large group of emerging and developed countries to borrow in their own currencies. Caballero and Krishnamurthy (2003) found that financial constraints led the emerging market firms to undervalue insuring against exchange rate depreciations, and take on excessive dollar debt. Calvo (2002) reviewed other reasons for why liability dollarization arose. See also the works of Allen and Gale (2000), Calvo (1996), and Calvo and Guidotti (1990).

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