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Firm-level exchange rate exposure in the Eurozone

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ABSTRACT

Using a sample of 1154 European firms from 11 countries, we show that firm-level exchange exposure for Eurozone and non-Eurozone European firms has increased since the introduction of the euro, but this rise was smaller for Eurozone than non-Eurozone firms. The increase in firm-specific exposure was offset by a substantial reduction in market-level exchange exposure in most Eurozone countries, so the advent of the euro appears to have been associated with a shift in exchange risk from systematic to firm-specific. We also find that post-euro, Eurozone firms' exchange exposure is significantly greater than that of non-Eurozone European firms. This difference, however, disappears after controlling for several country-specific and firm-specific characteristics that potentially influence firms' exchange exposure.

1. Introduction

One of the purported benefits of a single currency zone is that foreign exchange risk is eliminated for intra-zone trade and investment, reducing uncertainty for firms operating across national borders (Eichengreen, 1990). For the Eurozone specifically, the elimination of exchange risk has been cited in various EU policy documents as an important benefit of Eurozone membership (see, for example, EU, 1995; EU, 2007). With the Eurozone now 10 years old, it is timely to look at Eurozone firms' exchange exposure, a topic that has received surprisingly little empirical attention. We examine the issue by comparing the exchange exposure of a sample of Eurozone and non-Eurozone European firms. Our data set comprises 1154 firms from 11 European countries – 7 Eurozone members: Belgium, France, Germany, Italy, the Netherlands, Portugal and Spain, and 4 non-Eurozone countries: Norway, Sweden, Switzerland and the UK.

In the first stage of our research, we estimate firm-level exchange exposure in two periods: the pre-euro period from January 1990 to December 1998, and the post-euro period from January 1999 to January 2008. This is conducted using the technique pioneered by Jorion (1990) that has become standard in the exchange exposure literature, involving a time-series regression of changes in the trade-weighted exchange rate against the return on a firm's stock, while controlling for market effects. Contrary to expectations, we find that in the post-euro period, Eurozone firms have higher exchange rate exposure than non-Eurozone firms. We also find that exposure increased after the introduction of the euro for both Eurozone[1] and non-Eurozone firms, but this increase was smaller for Eurozone firms – a finding that is supportive of the benefits of Eurozone membership alluded to above. These findings prompt further investigation, and we conduct two further tests. *First*, if firm-level or 'idiosyncratic' exchange exposure has increased, what has happened to exposure at the level of the market?

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[1] This is in contrast to Bartram and Karolyi (2006), who found a reduction in exchange exposure after the advent of the euro, although this was economically and statistically small. Bartram and Karolyi's data set, however, extends only to the end of 2001.

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We find that market-level exchange rate exposure has declined in Eurozone countries by more than it has in non-Eurozone European countries.

Second, we investigate why firms in the Eurozone have higher exchange exposure than firms in our sample of non-Eurozone countries. Using the exchange response coefficients estimated from the firm-specific time-series regressions as the dependent variable, we run cross-sectional regressions to determine whether this difference can be explained by country-level and firm-specific factors that have been found in prior studies to explain exchange exposure. The country-level factors are economic openness, shareholder rights and creditor rights; and the firm-specific factors are size, industry, and four financial ratios: debt-to-assets, market-to-book, dividend payout and the quick ratio. After controlling for these characteristics, we find no difference between the firm-specific exchange exposure of firms within and outside the Eurozone.

The remainder of this paper is structured as follows. In Section 2 we describe our approach to estimating firm-level exchange exposure and present our data set. Sections 3 and 4 present our findings on firm-level and market-level exchange exposure respectively. In Section 5 we discuss and present our findings on the firm-level pooled cross-sectional analysis, and in Section 6 we discussion the implications for corporate strategy. Section 7 provides concluding comments.

2. Methods and data

2.1. Exchange rate and stock market index data

Our sample comprises firms in seven Eurozone member countries: Belgium, France, Germany, Italy, the Netherlands, Portugal and Spain; and four non-Eurozone European countries: two EU members – Sweden and the UK, and two non-EU – Norway and Switzerland. Our exchange rate data are IMF monthly nominal effective trade-weighted exchange rates from January 1990 to January 2008 (sourced from Datastream), with an increase in the exchange rate index indicating an appreciation of the currency. Our stock price and market index data are also from Datastream, and the index data are Datastream weighted indexes for each country. We divide the data into two nearly equal time periods: January 1990 to December 1998 and January 1999 to January 2008. Summary information on the exchange rates (mean and standard deviation of the log change for each period) and exchange rate arrangements of our sample countries is presented in Table 1. As expected, exchange rate volatility falls for the Eurozone countries after the introduction of the euro, from an average standard deviation of 1.02 to 0.65. Volatility also falls for the Swedish, Swiss and UK currencies, but it rises substantially from the 1990s to the 2000s for Norway. This may be because Norway switched from a managed float (in place from 1992 to 2001) to an independent float in 2002.

2.2. Estimating firm-level exchange exposure

Adler and Dumas (1984) suggested that the foreign exchange exposure of a firm can be quantified by measuring the sensitivity of equity returns to exchange rate changes. An extensive body of work has subsequently examined the relation between exchange rate exposure and firm value using this and similar approaches, although it has mostly been

Table 1
Exchange rate volatility and exchange rate arrangements.

	Pre-euro		Post-euro		Exchange rate arrangements
	Mean	S.D.	Mean	S.D.	
Eurozone countries					
Belgium	0.04	0.78	0.04	0.67	Eurozone[a]
France	0.07	0.78	0.04	0.68	Eurozone[a]
Germany	0.08	0.93	0.06	0.83	Eurozone[a]
Italy	−0.21	1.84	0.08	0.74	Eurozone (ERM 1979 to 1992, euro 1999)
Netherlands	0.02	0.76	0.04	0.73	Eurozone[a]
Portugal	−0.06	0.93	0.03	0.43	Eurozone (ERM 1992, euro 1999)
Spain	−0.23	1.15	0.03	0.49	Eurozone (ERM, 1989)
Average	−0.04	1.02	0.05	0.65	
Non-Eurozone countries					
Norway	−0.09	0.99	0.13	1.42	Independent float (fixed to 1992; managed float 1992–2001)
Sweden	−0.22	1.75	0.01	1.29	Independent float (fixed to 1991; ERM 1991–1992)
Switzerland	0.12	1.40	0.05	1.03	Independent float (1973)
UK	0.03	1.75	0.01	1.16	Independent float (managed float to 1990, ERM, 1990–1992)
Average	−0.04	1.47	0.05	1.23	

Notes: This table presents summary statistics for the exchange rates, and provides a brief summary of the exchange rate arrangements over the sample period. The data are monthly IMF trade-weighted exchange rates sourced from Datastream. The means and standard deviations of the log change in the exchange rates are reported in the table. The pre-euro period runs from January 1990 to December 1998, and the post-euro period begins January 1999 and ends January 2008.

[a] Belgium, France, Germany and the Netherlands jointed the Exchange Rate Mechanism (ERM) in 1979 where they remained until they joined the Eurozone in 1999.