



Strategic hedging: Evidence from Brazilian exporters

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ABSTRACT

How and why do exporters adjust their portfolios of destination countries in response to exchange rate movements? How do such geographic export diversification choices affect firm performance? Drawing on the corporate strategy and international business literature, we argue that firms enjoying low exchange rate competitiveness can increase their performance by expanding their exports to different world regions and vice versa. Studying a panel of Brazilian exporters during the years 2001–2010 and using a system of moderated mediation models with firm, industry and period fixed effects, we find that *unrelated* geographic diversification of exports is more effective than related diversification in counteracting exchange rate pressures.

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1. Introduction

Since the early 2000s, increasing commodity prices, macroeconomic stability and inward foreign direct investment (FDI) have triggered strong appreciation in the currencies of several emerging economies, such as Brazil, Chile and Colombia.¹ Trends of this type generally worry their exporters, who encounter greater difficulty in selling their products abroad. Strategic hedging—the distribution of exports across countries and regions to compensate for currency losses in certain countries and regions with gains in other countries and regions—is an important approach to address this problem (Peng, 2013). This definition applies to geographic diversification of exports and is therefore different from operational hedging, which entails a network of manufacturing operations across countries (Pantzalis, Simkins, & Laux, 2001).

Whereas conventional wisdom teaches us that exchange rate pressure leads exporters to withdraw from foreign markets, little is known about the following questions: *How and why* do exporters adjust their portfolios of destination countries and regions in response to exchange rate movements? How do such geographic export diversification choices affect firm performance? Understanding how the real effective exchange rate competitiveness of a firm, the geographic diversification of exports and firm performance are related may assist export managers in designing adequate strategic responses to sustained shifts in exchange rate competitiveness.

Drawing on the corporate strategy and international business literature (Hill & Hoskisson, 1987; Rugman & Verbeke, 2004), we

argue that the relationship between exchange rate competitiveness and geographic diversification of exports follows an inverted U-shape. Furthermore, *more* geographically diversified firms perform better when exchange rate competitiveness is *low* and vice versa. We test our arguments by analyzing a panel of Brazilian exporters during the period from 2001 to 2010, and we seek to offer four contributions to the scholarly literature.

First, this study contributes to the debate on the merits of related versus unrelated geographic diversification. Previous research drew upon the resource-based perspective and argued that related (or within-region) diversification is more appropriate than unrelated or cross-regional diversification (Cantwell, 2005; Chen & Tan, 2012; Hill & Hoskisson, 1987; Qian, Khoury, Peng, & Qian, 2010; Qian, Li, Li, & Qian, 2008; Rugman, 2005). Conversely, an alternative line of research drew upon the financial portfolio and the real option perspectives (Chung, Lee, Beamish, Southam, & Nam, 2013; Kogut & Kulatilaka, 1994). These researchers argued that firms can hedge their exchange rate exposure by increasing the number of export or FDI destination countries while maintaining limited exposure to individual markets (Allen & Pantzalis, 1996; Lee & Makhija, 2009a, 2009b; Pantzalis et al., 2001). If a larger number of destination countries implied unrelated geographic diversification, then these lines of research would be at odds. Given this likely inconsistency, we answer a call by Rugman and Verbeke (2004) for studies on regional patterns and the scope of diversification. We find that exporters pursue unrelated diversification in response to shifts in exchange rate competitiveness.

Second, this study contributes to the literature on the motivations for geographic diversification (Hirsch & Lev, 1974; Hitt, Tihanyi, Miller, & Connelly, 2006; Hoskisson & Hitt, 1990; Ito, 1997; Meyer, 2006) by introducing exchange rate competitiveness as a driver of geographic diversification of exports. Most of the

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¹ The Economist. Waging the currency war. January 13, 2011.

literature has neglected exchange rate competitiveness despite its particular relevance to exporters (Aulakh, Kotabe, & Teegeen, 2000; Campa, 2004; Salomon & Shaver, 2005).

Third, this study questions the frequent assumption that exchange rate competitiveness directly affects firm performance. In fact, research on this topic has produced mixed results (Donnelly & Sheehy, 1996; Fraser & Pantzalis, 2004; Luehrman, 1991). This study extends the integrated field of international strategy and international economics by proposing that the effect of exchange rate competitiveness on firm performance is mediated by the geographic diversification of exports.

Finally, we use a system of equations to robustly test moderated mediation models and add firm, industry and time period fixed effects to take firm and industry heterogeneity and external economic shocks into account. We address potential omitted variable bias (endogeneity), which is often neglected in the literature on geographic diversification and performance (Verbeke & Forootan, 2012). Moreover, we extend studies that questioned existing measures of geographic diversification (Pangarkar, 2008) and introduce standardized entropy measures of related, unrelated and total geographic diversification.

2. Theoretical framework

2.1. Exchange rate competitiveness and geographic diversification of exports

Firms can respond to uncertainty and risk with financial or strategic hedging (Miller, 1992). Whereas financial hedging constitutes a short-term strategy that uses currency derivatives (e.g., currency forward contracts and swaps), strategic hedging seeks to manage long-term risks and uncertainty (Chowdhry & Howe, 1999; Huchzermeier & Cohen, 1996; Logue, 1995; Pantzalis et al., 2001). In operations, for instance, strategic hedging may involve shifting production among multinational manufacturing plants and flexibly sourcing manufacturing inputs from several international suppliers. Also called “operational hedging,” this strategy seeks to address possible cost increases (e.g., labor or taxes) or the risk of disruptions in manufacturing operations of multinational corporations (MNCs) (Allen & Pantzalis, 1996; Cohen, Fisher, & Jaikumar, 1989; Huchzermeier & Cohen, 1996; Lee & Song, 2012). In sales, strategic hedging endeavors to combine income streams from geographically diversified markets (Miller, 1992) to address challenges associated with exchange rate competitiveness.

Compared with MNCs, exporters, which are non-MNCs that produce exclusively at home by definition, are much more dependent on the competitiveness of their home country's exchange rate (Aulakh et al., 2000). Appreciation of the currency of an exporter's home country with respect to the currency of its export destination country renders its products more expensive for buyers in these destination countries, and vice versa.

Similarly, a rise (or decrease) in the purchasing power in the export destination country results in higher (or lower) exchange rate competitiveness. As market imperfections hinder instant price adjustments, the concept of exchange rate competitiveness must consider bilateral exchange rates and purchasing power in home and export destination countries (i.e., real exchange rates). For instance, trade costs that include import tax, information, negotiation, transaction and logistics costs often result in significant differences in the relative prices across countries (Anderson & van Wincoop, 2004; Taylor & Taylor, 2004).

In light of the pressure from exchange rate competitiveness, some exporters attempt to pass on higher prices to distributors or end customers, i.e., exchange rate pass-through (Clark, Kotabe, & Rajaratnam, 1999). Depending on the price elasticity in the market

of a particular export, however, exchange rate pass-through may be unrealistic or produce limited impact. Alternatively, an exporter may internally absorb the negative pressure on profit margins by reducing margins, by enhancing productivity, by improving the cost structure of the firm through imports or by strategic hedging. The emphasis of this study is strategic hedging.

Strategic hedging may involve geographic diversification of exports, which is defined as the dispersion of foreign sales generated by firms with domestic production. Geographic diversification of exports can be characterized as related or unrelated. Related geographic diversification of exports refers to the dispersion of export sales “within a relatively homogenous cluster of countries,” whereas unrelated diversification entails the dispersion of export sales “across heterogeneous geographic regions” (Vachani, 1991, p. 308).

2.2. How does exchange rate competitiveness affect geographic diversification and firm performance?

A central premise of our argument is that exporters incur significant sunk costs in constructing internal (e.g., export department, adaptations to production processes) and external (e.g., foreign sales channels) infrastructures, in addition to the costs of learning, training and adapting products (e.g., certifications, marketing and labeling costs) (Bernard & Wagner, 2001; Roberts & Tybout, 1997). Firms tend to have delayed responses to variations in exchange rate competitiveness due to sunk costs (Bartov & Bodnar, 1994; Salomon & Shaver, 2005). Once firms have entered an export market, they have an incentive to remain in that market (Baldwin & Krugman, 1989; Baldwin & Lyons, 1994; Bernard & Jensen, 2004; Campa, 2004). However, if a firm does not retreat from an export market during periods of declining exchange rate competitiveness, they must modify their degree of geographic diversification to strategically hedge their exchange rate exposure.

We argue that exporters increase their geographic diversification even when their margins suffer from decreasing exchange rate competitiveness because they have an incentive to expand their sales to countries where they have a more competitive exchange rate. However, when exchange rate competitiveness deteriorates excessively (i.e., beyond a maximum threshold), firms tend to reduce their geographic diversification.

Exporters can capitalize on synergistic or financial economies that may compensate for reduced exchange rate competitiveness. The corporate strategy literature (Hill & Hoskisson, 1987) demonstrates that sales diversification across related countries seeks to exploit synergies across markets. Synergies can arise from using the same distribution channels (e.g., one distributor or logistics firm may be in charge of an entire region). Firms may also exploit synergies when adaptations of products, packaging, labeling or certifications are applicable to a group of countries or an entire region (e.g., countries with common regulatory environment, such as the European Union). Exporters may capitalize on synergies in an entire region by applying similar labeling or promotional strategies in countries that share a language (e.g., Latin American or African nations). Consequently, synergies across markets sustain economies of scale and scope (Douglas & Craig, 1989).

Learning by exporting (e.g., by interacting with clients, competitors and regulatory agencies) may enable product or process improvements and innovations (Salomon & Jin, 2010). Building on Johanson and Vahlne (1977), exporters can capitalize on higher productivity or enhanced sales in a group of related countries if learning outcomes are transferred among countries with similar customer requirements, business practices, logistics and distribution systems. Therefore, firms pursue related

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