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Exchange rates and firm survival: An examination with Turkish firm-level data

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ABSTRACT

Micro-level empirical research has begun to obtain important results on the effects of currency variations on firms' survival. The literature has, however, lacked a detailed analysis of the effects of exchange rates on firms' survival behavior in emerging markets due to a scarcity of firm-level information. Using a firm-level dataset, we investigate the impact of currency appreciation on the survival behavior of Turkish firms in the manufacturing industries for 2002–2009. Our results suggest that real exchange rate appreciation decreases the probability of survival in the manufacturing industries. We also find that high-productivity firms have a higher probability of survival than low-productivity firms following an appreciation of the exchange rate. Our findings indicate that the negative effect of a 1% real appreciation of the domestic currency on the survival probability of a given firm ranges from 4.5 to 9%, providing evidence for the vulnerability of developing countries to exchange rate movements. This evidence indicates that, especially for emerging market economies, economic events and policies leading to an appreciation in the domestic currency should be managed cautiously.

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1. Introduction

Exchange rate movements have important implications for survival patterns, particularly for exporting firms in developing countries where exchange rates are more volatile compared to the developed world. To date, the literature has lacked a detailed analysis of the effects of exchange rates on firms' survival behavior in emerging markets due to a scarcity of firm-level information. Recent improvements in micro data provide an opportunity to test the effects of currency variations on firms. This paper exploits a detailed dataset compiled by the Central Bank of Turkey (CBRT) to examine the effects of exchange rates on firms' survival behavior in Turkey.

Real exchange rate movements are thought to act like tariffs in how they affect survival behavior by altering firms' competitive positions in both domestic and international markets.¹ In this context, real exchange rate appreciation acts as an increase in foreign tariffs, creating a cost disadvantage for domestic producers in the export markets and raising the level of competition. Consequently, the least productive firms exit the market. For the case of a developing country, the impact of

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E-mail addresses: nazli.toraganli@mef.edu.tr (N. Toraganlı), ege.yazgan@bilgi.edu.tr (M. E. Yazgan).¹ In this framework, exchange rate appreciations (depreciations) are modeled as a decrease (increase) in domestic tariffs or an increase (decrease) in foreign tariffs. See Feenstra (1989) and Baggs et al. (2009).

exchange rate appreciation on firms' survival is expected to be larger, as transactions are generally not hedged because forward markets are not accessible to the bulk of the traders.

This paper uses a detailed dataset compiled by the Central Bank of Turkey that contains information on income statement and balance sheet items, the starting date of the establishment's operation, and industry affiliation classified according to the General Industrial Classification of Economic Activities within the European Communities Revision 1.1. This rich dataset provides a unique platform with which we empirically test the effects of exchange rates on the survival patterns of firms and compare the results with the theoretical predictions presented in the literature. The study covers the period 2002–2009.

The literature examining exchange rate variations on firms' survival patterns² has been rather limited and mostly concentrated on developed countries. The evidence on emerging markets has remained scarce. To the best of our knowledge, this study constitutes the first empirical study to examine the impact of exchange rates on firm survival in Turkey and only the second one for an emerging market, after China. Our results suggest that a 1% real appreciation of the Turkish Lira for a given firm decreases the probability of survival by between 4.5 and 9% depending on the specification, providing evidence for the vulnerability of a developing country to exchange rate movements. Moreover, we find evidence that high-productivity firms have a higher probability of survival than low-productivity firms following an appreciation in the domestic currency, a finding that confirms those of previous studies.³

2. Literature

The available longitudinal plant- or firm-level data has demonstrated the existence of large and persistent productivity differences among establishments in similar industries. Studies have further shown that these productivity differences are strongly associated with the establishments' export status (Bernard and Jensen, 1995; Aw and Hwang, 1995; Bernard and Wagner, 1997). This evidence has motivated the development of the new–new trade theory starting with the seminal paper of Melitz (2003), in which cross-firm heterogeneity in productivity has become a central assumption. With the emergence of this new literature, firms' international trading activity as a determinant of firm performance, and productivity in particular, has received much attention.

In a related literature, research has concentrated on the performance of firms engaging in international trade using a different measure other than productivity, firms' survival. Studies investigating the determinants of firms' survival behavior both in domestic and export markets include the impacts of changes in tariffs (Baggs, 2005), imports (López, 2006; Namini et al., 2011), two-way trading (Wagner, 2012), financial development and financial constraints (Görg and Spaliara, 2009), multinational status (Alvarez and Görg, 2009), and foreign direct investment (Kimura and Kiyota, 2006). For the Turkish case, Taymaz and Yılmaz (2014) analyze the impact of the presence of foreign firms on domestic firms' performance with an emphasis on survival and employment growth. They do not find conclusive evidence suggesting that foreign presence in the sector reduces domestic firms' survival probability. On the other hand, they document that several sector- (entry rate, growth rates of sectoral output and prices, the Herfindahl-Hirschman index and minimum efficient scale) and firm-specific variables (size, capital intensity and skill level) appear to have strong and consistent impacts on the survival probabilities.⁴

A number of studies have focused on the impact of exchange rate fluctuations on firm survival. In this line of research, Baggs et al. (2009) investigate the impact of real exchange rate changes on the survival and sales of firms in the manufacturing sector in Canada. They document that real appreciation reduces real sales and the probability of firms' survival. They also find that the effect of real domestic currency appreciation on firms' survival is larger for less productive firms. Baggs et al. (2010), concentrating on Canadian service sectors, show that the exchange rate effects on the survival of service sector firms are similar to those for the manufacturing firms discussed in Baggs et al. (2009). Baldwin and Yan (2011) examine the effects of real exchange rate movements and tariff reductions on plant death in Canadian manufacturing industries.⁵ They report that a 1% appreciation in the real exchange rate increases the probability of exit by 0.3%. In a more recent study, Baggs et al. (2014) examine the asymmetric effects of appreciation versus depreciation on firm survival and entry. Their results do not provide conclusive evidence of asymmetry in the response of firm survival to exchange rate changes. Feinberg (2010) analyzes US data, focusing particularly on retail and wholesale trade to explain small firms' exit rates, and documents that wholesalers respond negatively to a stronger currency, while appreciation has no impact on retailers on average.

² Depending on the coverage of the dataset used, studies in this area analyze survival patterns in export markets or in both local and export markets. This study focuses on the survival patterns in all markets without differentiating between local and export markets.

³ We expect that the results for firms' survival can also elucidate, albeit indirectly, exchange rate pass-through behavior. A central question in the literature on exchange rate pass-through is whether prices of traded goods respond proportionally or less than proportionally to exchange rate changes, i.e., whether the pass-through is complete or incomplete (see Goldberg and Knetter, 1997, for a survey of this literature). An insignificant effect of exchange rate appreciation on the survival of firms can be interpreted as evidence of incomplete pass-through because firms are not able to transmit exchange rate changes to export prices.

⁴ For a more detailed survey of the literature, see Wagner (2007), Wagner (2013) and Greenaway and Kneller (2007).

⁵ Parteka and Wolszczak-Derlacz (2013) analyze the impact of trade integration with the European Union on sectoral productivity growth in Poland and document that an increase in domestic sectors' openness exerts a positive effect on productivity. Similarly, Özler and Yılmaz (2009) document that the trade reforms of the 1980s and early 1990s had a substantial impact on productivity growth in the Turkish manufacturing industry. Taymaz and Yılmaz (2007) document that after the Custom Union, the productivity performance of Turkish manufacturing sectors slowed down substantially due to the worsening macroeconomic environment, while productivity gains were largest in import competing industries compared to export-oriented and non-traded sectors.

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