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Trade credit and cross-country predictable firm returns ☆

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ABSTRACT

We investigate the role of trade credit links in generating cross-border return predictability between international firms. Using data from 43 countries from 1993 to 2009, we find that firms with high trade credit located in producer countries have stock returns that are strongly predictable based on the returns of their associated customer countries. This behavior is especially prevalent among firms with high levels of foreign sales. To better understand this effect we develop an asset pricing model in which firms in different countries are connected by trade credit links. The model offers further predictions about this phenomenon, including stronger predictability during periods of high credit constraints and low uninformed trading volume. We find supportive empirical evidence for these predictions.

1. Introduction

During financial crises, stock market movements across the globe appear synchronized. To explain this observation, many have highlighted the role of direct economic links, such as trade flows, between countries.[1] Recent domestic evidence from the US shows that economic links not only explain contemporaneous correlations between firms' stock returns, but also provide useful information for predicting future firm-level stock returns [see, for example, Cohen and Frazzini, 2008; Menzly and Ozbas, 2010a, who

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[1] See, for example, Eichengreen, Rose, and Wyplosz (1996), Sachs, Tornell, and Velasco (1996), Eichengreen and Rose(1998), Rigobon (1998), Glick and Rose (1999), and Forbes (2004).

identify "upstream" and "downstream" firms in the US supply chain]. It is, therefore, natural to investigate whether such economic link-derived return predictability also exists between different countries, especially in light of the substantial interest in the sources of cross-border return correlations (see Karolyi and Stulz, 1996; Forbes and Rigobon, 2002; Bekaert, Hodrick, and Zhang, 2009). Our contribution in this paper is to identify the role of an important economic connection between firms across countries that leads to such cross-border return predictability, namely, trade credit.

Trade credit represents a significant source of financing for many firms (see Mian and Smith, 1992, 1994), in particular, those that are bank credit-constrained (see Petersen and Rajan, 1994a,b, 1997), and those that operate in emerging markets with underdeveloped legal systems and capital markets (see Demirguc-Kunt and Maksimovic, 2001; Fisman and Love, 2003). While a number of studies have pointed to international trade as a channel for the transmission of shocks (e.g., Eichengreen, Rose, and Wyplosz, 1996; Kaminsky and Reinhart, 2000; Forbes, 2004), complementary evidence suggests that trade credit is enhanced during financial crises, further linking the economic prospects of firms at such times. For example, Wilner (2000), Cuñat (2007), Love, Preve, and Sarria-Allende (2007), and Coulibaly, Sapriza, and Zlate (2011) find that trade credit increases to provide firms with a shield during financial distress relative to credit from financial intermediaries, and Chor and Manova (2010) show that industry sectors with low access to trade credit were most susceptible to credit market tightening during the 2007–2008 global financial crisis.[2]

We build a simple asset pricing model that delivers cross-predictability in returns driven by trade credit.[3] Our model uses three building blocks from two different streams of literature. From the corporate finance literature, we take the idea that trade credit arises as the extension of finance from financially stronger to financially weaker firms (e.g., Schwartz, 1974). From the international asset pricing literature, we borrow the assumption that asymmetric information exists in international capital markets between foreign and domestic investors (e.g., Gehrig, 1993; Brennan and Cao, 1997), and the assumption that markets are, at least partially, segmented (e.g., Errunza and Losq, 1985; Merton, 1987). Armed with these assumptions, we consider two countries with segmented stock markets each consisting of a representative firm. We designate one firm-country as the customer and the other firm-country as the producer. We model the correlation between the dividends of the two firms as rising with increases in trade credit and rising with the difference in the financing costs of the two firms. Each stock market is populated by domestic investors, who invest only in their local market, and by privately informed speculators, who invest in both markets. The investment opportunities available to speculators imply that they trade for information motives and for rebalancing motives, with the latter induced by the correlation between the two stock markets' returns.

To see how the model works, consider a positive shock to fundamentals in the customer country, about which speculators have private information. In equilibrium, some of this information flows to prices, causing a rise in the stock price of the customer country. If some information remains private, dividends would be higher than anticipated in prices, meaning that returns would be positive again in the future. In such an equilibrium, speculators increase their customer country holdings, bear more risk, and demand higher expected return, despite rebalancing their portfolios by selling some of their holdings in the producer country. When speculators sell on account of their rebalancing needs they have to concede some expected return to domestic investors in the producer country to induce them to buy, depressing the current price in the producer country. Thus, the model predicts cross-predictability, i.e., stock returns in the producer country can be predicted using prior movements in the customer country returns. Higher trade credit leads to a higher positive correlation across the two assets, and hence, a stronger rebalancing motive. This comparative statics exercise suggests that when trade credit is higher, cross-predictability is also higher.

The model delivers three main additional predictions regarding cross-predictability. First, cross-predictability is stronger when shocks to fundamentals dominate vis-à-vis shocks to rebalancing trades. Because shocks to rebalancing trades are associated with higher trading volume and lower cross-predictability, we hypothesize that cross-predictability is stronger when volume is lower. Second, cross-predictability is stronger when the difference in financing costs of the two firms is at its highest, i.e., when trading credit is most valuable. Third, the way trade credit drives predictability in stock returns has nonlinear effects, due to the reduced benefits of using trade credit when customer firms are doing well.

To empirically explore the role of trade credit in driving cross-country return predictability, we build on the strategy in Rizova (2010). Rizova finds that high-exporting (producer) countries' stock market returns can be predicted using their major-importing (customer) countries' stock market returns. We modify her approach to further allow for the possibility of economic linkages between firms located in different countries. We estimate a baseline specification that allows for separate predictions of firm-level excess stock returns of producer firms with high and low levels of trade credit, and we find that the predictability is concentrated in high trade credit firms. We then further restrict the set of producer firms with high levels of trade credit to those with high levels of foreign sales, in consonance with economic intuition and our model's predictions for the highest levels of predictability based on the trade credit channel under investigation.

Our results are best illustrated as the returns on portfolio strategies. Within the bottom quintile of producer countries sorted by their customer countries' past performance, a

[2] A body of literature shows that trade credit can serve as a mechanism for spreading shocks when monetary policy is tightened (see Nilsen, 2002; Choi and Kim, 2005).

[3] We use the term *trade credit* in the accounting sense of sales of goods or services that are paid for later by the customer and that are recorded as accounts receivable on the producer firm's balance sheet. Trade credit is not to be confused with trade finance, which normally arises as the result of the issuance of a letter of credit and is used to limit the risk to exporters of default by importers.