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Exchange rate volatility and UK imports from developing countries: The effect of the global financial crisis[☆]

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ABSTRACT

This paper studies the role of exchange rate volatility in determining the UK's real imports from three major developing countries – Brazil, China, and South Africa. The paper contributes to the literature by investigating the third country effect and also by analyzing the impact of the current financial crisis on the relationship between exchange rate volatility and UK imports. This paper further expands the empirical literature on the subject by offering evidence based on the asymmetric autoregressive distributed lag (ARDL) method from the application of monthly data from January 1991 to December 2011. Results suggest that exchange rate volatility plays an important role in determination of trade and also reveal a significant effect of the recent financial crisis on UK imports. This finding remains consistent when we test for the third country volatility effect. We also find that there is a significant causal relationship between exchange rate volatility and UK imports. The third country effect is significant for all the countries investigated. These results have significant implications for the trade policy and international trade in minimizing the underlying risk factors and ensuring stable trade flows in different economic scenarios.

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1. Introduction

After the collapse of the fixed exchange rate system under the Bretton Wood agreement in 1973, exchange rates for many currencies started to fluctuate, exposing traders to enormous uncertainty regarding their trade volumes and profitability (McKenzie, 1999; Bahmani-Oskooee and Hegerty, 2007). The risk of unexpected movements in the exchange rates deters the risk-averse exporters, resulting in a decline in the output level on their part (McKenzie, 1999; Bahmani-Oskooee and Hegerty, 2007); therefore, an increase in the exchange rate uncertainty translates into a profit risk for the exporter. Assuming the exporters are risk averse, and considering the non-diversifiable nature of exchange rate risk, increase in the profit risk reduces the benefits and thereby the volume of trade (Ethier, 1973; Blanchard et al., 2005; Obstfeld and Rogoff, 2005). This paper contributes to the literature by investigating the effect of exchange rate volatility (uncertainty) on the UK imports from three major developing trade partners – Brazil, China, and South Africa.

Theorists have presented various models to explain the basis for and the dynamics of the relationship between exchange rate volatility and international trade. The main hypothesis found in early literature is that exchange rate volatility reduces

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international trade (Ethier, 1973; McKenzie, 1999; Krugman, 2007; Bahmani-Oskooee et al., 2013). This hypothesis assumes that the international traders are risk averse and that, in the wake of increased volatility, these traders will reduce their level of output leading to a reduction in international trade. A positive impact of volatility on international trade has also been hypothesized by a number of studies (McKenzie, 1999; Bahmani-Oskooee and Hegerty, 2007). However, DeGrauwe (1988) contends that the relationship between exchange rate volatility and trade flow is analytically indeterminate.¹ Moreover, Sercu and Uppal (2003) show that the relationship between international trade and exchange rate volatility can be either negative or positive depending on the underlying source of the change in exchange rate volatility.

According to Bahmani-Oskooee and Hegerty (2007), much of the existing evidence on the subject is limited to just two economies, which does not reflect the real-world scenario where every economy is competing against many other economies in its respective region as well as globally. Similar arguments have also been documented by Cushman (1986) and McKenzie (1999); according to these studies, the third country effect² is important from the point of view of competition in the global business as every exporting country is competing against many other countries. According to Cushman (1986) this is a very important aspect in terms of global competition as changes in the trade pattern between two countries could be due to the exchange rate movements of another country's currency (not involved in the trade) against that of the home country. In other words, the third country exchange rate movement may divert importers in the domestic country from one trading partner to another. Similarly, exporters in the domestic country may decide to sell their products to another country due to better price prospects. Against this background this paper further contributes to the UK trade literature by including the third country effect for the UK imports from developing countries.

Another important limitation identified in the literature by McKenzie (1999), Bahmani-Oskooee and Goswami (2004), Bahmani-Oskooee and Ardalani (2006) and Bahmani-Oskooee and Hegerty (2007) is methodological. Many studies to date have relied on the standard cointegration methods which require all variables to be $I(1)$ or nonstationary at level. However, exchange rate volatility is usually stationary at level. Given the mixed scenario of $I(0)$ and $I(1)$ series, Bahmani-Oskooee and Hegerty (2007) have suggested the use of the asymmetric autoregressive distributed lag (ARDL) (Bounds Testing Approach) proposed by Pesaran et al. (2001). This paper further contributes to the field by applying the asymmetric ARDL method (Shin et al., 2013).

The recent financial crisis has caused highly volatile shocks across all asset classes globally, including foreign exchange markets (Fratzscher, 2009; Melvin and Taylor, 2009). Many researchers have classed this crisis as more severe than the Great Depression of the 1930s, in terms of its longevity and the extent of severity in economic and social costs, and in policy interventions by governments around the globe (Fratzscher, 2009, 2012). This provides sufficient motivation for analyzing the impact of the financial crisis on the relationship between exchange rate volatility and the UK's imports. As the existing literature in this area provides very little evidence in this context, this research aims to make a significant contribution in this field.

Accordingly this paper makes four key contributions to the literature. First, we study the effect of the exchange rate volatility on the UK imports from developing countries. To the best of our knowledge this is the first empirical study involving UK trade with developing countries. Second, we also study the third country effect on the volatility and import relationship. Third, we investigate the effect of the financial crisis on the relationship between volatility and UK imports with and without the third country effect. Finally, we also make a contribution based on the econometrical model we apply, the asymmetric ARDL model.

Results, based on asymmetric ARDL, confirm the long-term relationship between UK imports and exchange rate volatility along with other determinant variables such as the UK's real income and the relative import price ratio. These relationships hold irrespective of the exchange rate volatility (nominal or real) and the time period selected, i.e. before or after the inclusion of the financial crisis period. Normalized coefficients for the nominal and real exchange rate volatilities show a large number of inverse relationships. With respect to third country exchange rate volatility which, for developing countries, is represented by the dollar/pound exchange rate volatility, this has a negative impact on imports from Brazil, China and South Africa in almost all the tests. Other determinant variables such as real income and relative price ratio are also significant in most of the tests. Import demand elasticity toward all regressors, particularly real income and exchange rate volatility, significantly changes across both data samples, i.e. before and after the financial crisis. More importantly, the results show strong evidence of asymmetric behavior in the underlying independent variable for all countries; to our knowledge no evidence is available in the existing literature to this effect. Furthermore, the incidences of long-term asymmetry increase after the inclusion of the financial crisis which shows that the structural shift in the long-run relationship between these variables was caused by this crisis. These findings also hold in the presence of third country exchange rate risk.

The remainder of the paper is organized in the following manner. Discussion in section 2 links the exchange rate volatility and the recent financial crisis to international trade. Section 3 describes the data and the estimation of the exchange rate volatility as well as the unit root tests results. Section 4 offers the methodological approach and discusses the results obtained. Finally, the conclusion is presented in section 5.

¹ Some previous studies have also documented little or no significant effect of the exchange rate variability on international trade (see Koray and Lastrapes, 1989; Bahmani-Oskooee, 1991; Gagnon, 1993; Bahmani-Oskooee et al., 2013; Haile and Pugh, 2013).

² Third country effect is the change in the trade between two countries due to the exchange rate movement of a third country not involved in the trade (Cushman, 1986).

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