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Exchange rate volatility and Spanish-American commodity trade flows



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ABSTRACT

A number of recent studies have tested the impact of exchange rate volatility on trade flows, particularly for individual commodities, for various country pairs. These have found that risk can increase as well as decrease trade, but that oftentimes industries are not affected. This study examines trade between the United States and Spain over the period from 1962 to 2009, for 131 U.S. export industries and 88 import industries. We find that exchange rate volatility has short-run and long-run effects in only a fraction of the cases, but that exports respond more to increased uncertainty than imports do. In all, only 35 of the 74 U.S. export industries are affected (11 positive, 24 negative), whilst only three out of 37 import industries have positive coefficients and 11 have negative ones. We find no evidence that durable or nondurable goods are more likely to respond to volatility, whilst small industries or specialized goods might show more of a positive response.

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1. Introduction

Exchange rate volatility, like any type of risk, can hinder economic activity and reduce trade flows. Exporters or importers, unsure of the domestic value of their costs or revenues, might be unwilling to take part in risky international transactions. At the same time, “locked in” contracts might mean that

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traders are able to adjust their behaviour only after a period of time. As a result, it is important to estimate the role of exchange rate volatility on international commerce for the short run as well as the long run. These empirical tests would need to be done for any country pair and for any commodity that is traded internationally. In this study, we estimate this trade between the United States and Spain for 131 U.S. export industries and 88 import industries.

According to the U.S. census, U.S. exports to Spain were \$9.5 billion in 2012, and imports from Spain totalled 11.8 billion. This is four times the nominal 1985 value and greater than the 2012 values for South Africa, for example. As such, this trade partnership is an important one. In addition, Spanish trade has made up a steady share of the U.S. total. For example, in 1990, Spain was the destination of 1.5% of U.S. exports and the source of 0.7% of U.S. imports; the corresponding figures in 2012 were 0.6% and 0.5%, respectively.

Studying Spanish trade with non-Euro nations is also important, because a reduction in risk might aid exports and help bring the Spanish economy out of recession. This would thus provide further incentive for bringing the Euro crisis under control. In our analysis, we find that our results are mixed, as are those of many earlier studies in this branch of the literature. In particular, specialized industries seem to be more likely to respond positively to risk than other types of commodities.

This literature has been thoroughly reviewed by McKenzie (1999) and Bahmani-Oskooee and Hegerty (2007). This later study, in particular, notes that there are theoretical justifications for exchange rate variability having a positive effect on trade flows, or even no effect at all. “Risk loving” traders might be willing to make money off of exchange rate variability, or risk management might result in there being little, if any, impact. Recent attempts have been made to “uncover” the effects of exchange rate volatility by disaggregating trade data to the industry level. Since the effects of risk might vary by industry, they might be obscured in an aggregate trade flow series. Many empirical papers do indeed show evidence of mixed effects.

As these review papers also show, there are relatively few analyses of the specific case of bilateral trade between the United States and Spain, particularly at the commodity level. A few older, aggregate studies include Thursby and Thursby (1985), who examine a number of countries, but find no significant results for Spain, and Arize (1998), who uses cointegration analysis to show that exchange rate volatility reduces Spanish aggregate imports.

These mixed results are no surprise. But there is clearly room in the literature for a comprehensive study of the role of exchange rate risk on Spain’s industry-level trade flows. This paper provides such a study, using cointegration analysis to estimate short- and long-run effects for Spanish-U.S. trade for a number of export and import industries. This study proceeds as follows: Section 2 outlines the econometric methodology. Section 3 describes the results, and Section 4 concludes. Data are described in Appendix.

2. Methodology

In our investigation of United States trade with Spain, we use annual data for 131 U.S. export industries and 88 import industries. These are disaggregated to the SITC 3-digit level and span the period from 1962 to 2009. We use a reduced-form model in which each trade flow is a function of the purchasing country’s GDP, the real Spanish/U.S. exchange rate, and a measure of volatility. These variables are explained in Appendix. Each industry’s real export and/or import flow is estimated individually, for a total of 219 separate sets of results.

Because our focus is on the short run as well as the long run—to capture the effects of volatility both before and after adjustment occurs—and because our dataset may contain a mixture of stationary and nonstationary variables, we use a methodology that is commonly applied in this branch of the literature: the autoregressive distributed lag (ARDL) approach of Pesaran et al. (2001). This single-equation methodology provides short-run and long-run coefficient estimates simultaneously. In addition, the long-run coefficients also form the basis of a cointegration test, and the method is able to incorporate stationary as well as $I(1)$ variables.¹

¹ Nonlinear methods may provide a useful extension to our analysis, but we have not employed them here.

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