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Currency depreciations and the U.S.–Italian trade balance: Industry-level estimates

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ABSTRACT

As one of the indebted Southern European countries that have put pressure on the Euro in recent months, Italy would benefit from a reduction in its external trade deficit. One channel could be through a weakening of its currency—which would only work if the Euro depreciated against the currency of an outside importer, such as the U.S. dollar. This study examines the response of the trade balances of 106 individual industries to such depreciations, using annual data and applying cointegration analysis. We find that only 19 industries register a long-run improvement, with these concentrated in miscellaneous manufactures (SITC sector 8). Two major products in the automotive industry—petroleum and road motor vehicles, show evidence of a "*J*-curve" effect.

1. Introduction

As the Euro area experiences another round of painful adjustment, questions arise of restoring competitiveness to many of its larger, more indebted members. While the common currency precludes the traditional mechanism of individual exchange-rate adjustment, Euro fluctuations still matter for trade outside the region. And since the current debt crisis should lower the value of the European currency vis-à-vis the rest of the world, it is possible that relief could be found through market mechanisms. But this brings up a common question in the international finance literature: How sensitive are these countries' trade balances to depreciations of their currency?

In this study, we examine the specific case of trade between Italy and the United States. While there is no way to devalue against major trade partners such as Germany, currency depreciation against the dollar may still be an effective tool to boost Italy's economy. With $43 billion worth of bilateral trade (making up a large share of Italy's $2 trillion economy), the impact is worth investigating. Fig. 1 shows the U.S.–Italian real exchange rate over our sample period.

Literature reviews by Bahmani-Oskooee and Ratha (2004) and Bahmani-Oskooee and Hegerty (2010) examine the "*J*-Curve" effect, in which depreciations are followed by a temporary deterioration of a country's trade balance before an improvement takes hold, and further studies have extended this literature. In general, mixed results have been found, regardless of whether aggregate, bilateral, or industry-level trade.

For example, an aggregate analysis by Langwasser (2009) looks at a number of Euro members and finds varying responses by country—which can have implications for a common monetary policy in the Euro zone. Using impulse

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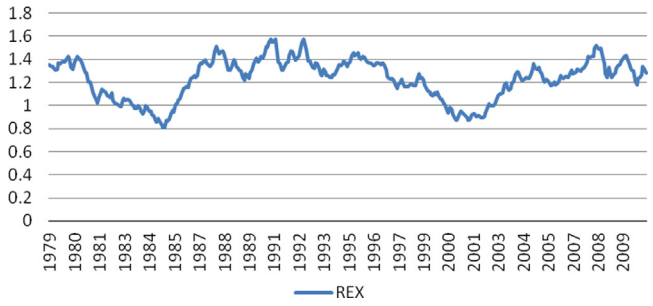

Fig. 1. U.S.–Italian Real Exchange Rate, 1979–2010.

responses, she finds that a currency innovation does lead to a new (and lower) equilibrium for Italian imports. The results are less clear for exports. The study does not deal specifically with the U.S. as a partner, however.

While few studies look specifically at the U.S.–Italy relationship, but many do look at other country pairs, particularly at the industry level of aggregation. The majority of these find that specific industries respond differently from one another. For example, Bahmani-Oskooee and Hegerty (2011), examining the important U.S.–Mexico partnership, attribute the finding that only a tenth of all industries show a significant improvement after a devaluation to the fact that intra-industry trade allows large firms to protect against currency fluctuations. Relatively limited effects for industry trade have also been found by Bahmani-Oskooee et al. (2011a) for Mexico and Canada, Bahmani-Oskooee et al. (2011b) for the U.S. and France, and Bahmani-Oskooee et al. (2012) for Sweden and Germany.

Couple studies have considered the U.S.-Italian trade balance at bilateral but aggregate level. Rose and Yellen (1989) considered bilateral trade data between the U.S. and each of her seven major trading partners, including Italy. Using cointegration and error-correction approach they concluded that "it seems reasonable to conclude that the aggregate data does not provide reliable evidence of either the negative short-run effect or the positive long-run effect, which jointly constitute the *J*-curve."[1] On the other hand, Hsing and Sergi (2010) found evidence of cointegration between the countries' overall trade balance and real exchange rate. But, while there appeared to be a long-run relationship between the variables, impulse-response functions reveal that a shock to the exchange rate leads to a large decrease in the trade balance that remains negative up to 20 months after the shock. This sustained negative effect not only responds opposite to what theory would predict, it also does not fit the definition of the "*J*-Curve."

We dig deeper into the data to uncover whether any significant pattern does indeed exist for U.S.–Italian trade. Following trends in the recent literature, we examine the bilateral trade balances for 106 individual industries. Like these previous studies, we find many significant results, which vary from industry to industry. Only 19 of the industries show a long-run improvement after a devaluation, but these are highly concentrated in "miscellaneous" manufactures. In particular, road motor vehicles show evidence of a "*J*-Curve" effect.

This paper proceeds as follows. Section 2 outlines the methodology. Section 3 explains the results, and Section 4 concludes. Data are explained in the Appendix.

2. Methodology

Using annual data from 1979 to 2010, we estimate separate equations for 106 individual industries. We model the U.S. trade balance as a function of both countries' incomes and the U.S.–Italian real exchange rate. These variables are explained in detail in the Appendix, but we expect that increases in Italian income will increase the trade balance, increases in U.S. income will decrease it (by increasing imports), and increases in the real exchange rate (in terms of dollars per unit of Italian currency) will increase it, since an increase in this variable represents a real depreciation of the dollar.

We estimate our models using the Autoregressive Distributed Lag (ARDL) methodology of Pesaran et al. (2001). This approach has become the standard for similar studies in the literature[2] because it provides short-run and long-run coefficient estimates, as well as a cointegration test, in a single step; incorporates stationary and nonstationary variables simultaneously; and is robust to small samples. Bahmani-Oskooee and Hegerty (2011) explain these benefits in greater detail. The error-correction specification of the model that we intend to estimate is as follows:

$$\Delta \ln\left(\frac{X_t}{M_t}\right) = \alpha + \beta EURO_t + \sum_{j=1}^{n1} \gamma_j \Delta \ln\left(\frac{X_{t-j}}{M_{t-j}}\right) + \sum_{j=0}^{n2} \delta_j \Delta \ln Y_{t-j}^{Italy} + \sum_{j=0}^{n3} \lambda_j \Delta \ln Y_{t-j}^{US} + \sum_{j=0}^{n4} \pi_j \Delta \ln REX_{t-j} + \theta_1 \ln\left(\frac{X_{t-1}}{M_{t-1}}\right) + \theta_2 \ln Y_{t-1}^{Italy} + \theta_3 \ln Y_{t-1}^{US} + \theta_4 \ln REX_{t-1} + \varepsilon_t \quad (1)$$

[1] Rose and Yellen (1989, p. 67).

[2] See Halicioglu (2007), Narayan et al. (2007), Tang (2007), Wong and Tang (2008), Payne (2008), Mohammadi et al. (2008), De Vita and Kyaw (2008), Bahmani-Oskooee and Hegerty (2009), Bahmani-Oskooee et al. (2011a,2011b), or Bahmani-Oskooee et al. (2012), and for more specifics on this approach.