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On the trade impact of nominal exchange rate volatility

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Abstract

What is the effect of nominal exchange rate variability on trade? I argue that the methods conventionally used to answer this perennial question are plagued by a variety of sources of systematic bias. I propose a novel approach that simultaneously addresses all of these biases, and present new estimates from a broad sample of countries from 1970 to 1997. The estimates indicate that nominal exchange rate variability has no significant impact on trade flows.

JEL classification: C21; F10; F11; F12; F15
Keywords: Exchange rate volatility; Trade; Gravity equation; Heteroskedasticity; Poisson regression; Instrumental variable

1. Introduction

Major changes are reshaping the international monetary system. The Communist Party in China is considering the idea of floating the Chinese yuan and so are several Asian governments.[1] In the same direction, although prompted by the drastic collapse of its currency board, Argentina has moved towards a (managed) float. On the other extreme, and after the recent institution of the euro, many countries in Eastern Europe are joining while others are expected to join the euro area. El Salvador and Guatemala have reinforced their peg to the dollar, and Ecuador has dollarized its economy.

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[1] Currently, the Malaysian ringgit is pegged to the US dollar and the Hong Kong dollar is tied to the US dollar through a currency board. Other Asian countries are officially floating, but the facto, central banks have been intervening to keep their currencies fixed to the US dollar.

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These recent developments have reinvigorated the policy debate over the pros and cons of different exchange rate systems. One of the issues in the debate is the trade effect of nominal exchange rate variability.[2] Proponents of fixed exchange rates have long argued that the risks associated with exchange rate variability discourage economic agents from trading across borders. Opponents have maintained that there are good instruments to hedge against this type of nominal volatility, and hence this effect should be immaterial. The question of the magnitude of the trade effect of exchange rate variability is an empirical one, and the subject of this investigation.[3]

The economics literature has provided at best mixed results. Most early studies, including Abrahms (1980) and Thursby and Thursby (1987), document a large negative effect of nominal variability on trade.[4] Studies from the 1990s, including Frankel and Wei (1993), Eichengreen and Irwin (1996), and Frankel (1997) report negative, albeit quantitatively small effects.[5] More recent studies on the effect of currency unions and unilateral dollarizations on trade, however, document large effects. (See, for example, Rose, 2000; Engel and Rose, 2000; Frankel and Rose, 2002; Alesina et al., 2002; Tenreyro and Barro, 2002). Frankel and Rose (2002) extend the analysis to currency boards, also finding significantly large effects. It could be argued that currency unions involve more than the mere elimination of exchange rate variability, although the case is less clear for currency boards. Furthermore, some critics have contended that countries that have historically been part of a currency union are too small and too poor to make generalizations about the effect of currency unions (boards) in larger countries. These interpretations and criticisms reinforce the need for a second look at the data that is not limited to this extreme type of exchange rate regime.

This paper argues that there are several estimation problems in previous studies of the impact of nominal variability (and more generally, of exchange rate regimes) on trade that cast doubt on previous answers. These studies have typically been framed in the context of the "gravity equation" model for trade.[6] In its simplest form, the empirical gravity equation states that exports from country i to country j, denoted by T_{ij}, are proportional to the product of the two countries' GDPs, denoted by Y_i and Y_j, and inversely proportional to their distance, D_{ij}, broadly construed to include all factors that might create trade resistance. Importer and exporter specific effects, s_j and s_i, are added to account for multilateral resistance.[7] The gravity

[2] Three other important issues are part of the debate: one is the relevance (or irrelevance) of monetary policy independence to dampen business cycle fluctuations. Another is the effect of exchange rate variability on financial markets. And a third issue is the ability of different regimes to stabilize inflation.

[3] The focus on nominal exchange rate variability (as opposed to real exchange rate variability) owes to the fact that the nominal rate is a priori the monetary instrument that policy makers can directly affect. In practice, however, nominal and real exchange rates move very closely, so, learning about the implications of nominal variability amounts to learning about the implications of real variability.

[4] The exception is Hooper and Kohlhagen (1978), who find no significant effects on trade volumes but a big effect on prices.

[5] See also De Grauwe and Skudelny (2000), who focus on European trade flows, and find statistically significant negative effects. See Côté (1994) and Sekkat (1997) for recent surveys on the literature.

[6] For theoretical foundations of the gravity equation model, see, for example, Anderson (1979), Helpman and Krugman (1985), Bergstrand (1985), Davis (1995), Deardoff (1998), Haveman and Hummels (2001), Feenstra et al. (1999), Barro and Tenreyro (2006), Eaton and Kortum (2001), and Anderson and van Wincoop (2003).

[7] See Anderson and van Wincoop (2003) for a formulation of the concept of multilateral resistance, and Rose and van Wincoop (2000) for a related empirical implementation.