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# Sources of exchange-rate volatility: Impulses or propagation?

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## Abstract

This paper examines whether the remarkable increase in exchange-rate variability since the end of the Bretton Woods period has been the result of a less stable structure (the propagation mechanism) or more volatile shocks (the impulses). Using monthly data over the 1957:1 to 2000:12 period from the US, Canada, Germany, and the UK, our estimates of actual and counterfactual variances suggest that the increased volatility is entirely the result of more violent shocks, and not at all the consequence of a less stable structure. This result is robust to a number of different specifications examined.

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## 1. Introduction

One of the most striking developments in the behavior of exchange rates has been the tremendous increase in volatility that has followed the end of the Bretton Woods system in 1971 (see Fig. 1). While this is usually viewed as the inevitable consequence of floating, the question of why and how the new regime resulted in such an increase in exchange-rate variability still needs to be addressed. The goal of the present paper is to distinguish between two competing explanations: one that faults a supposedly less stable structure and one that holds responsible the shocks that originated in a more volatile environment.

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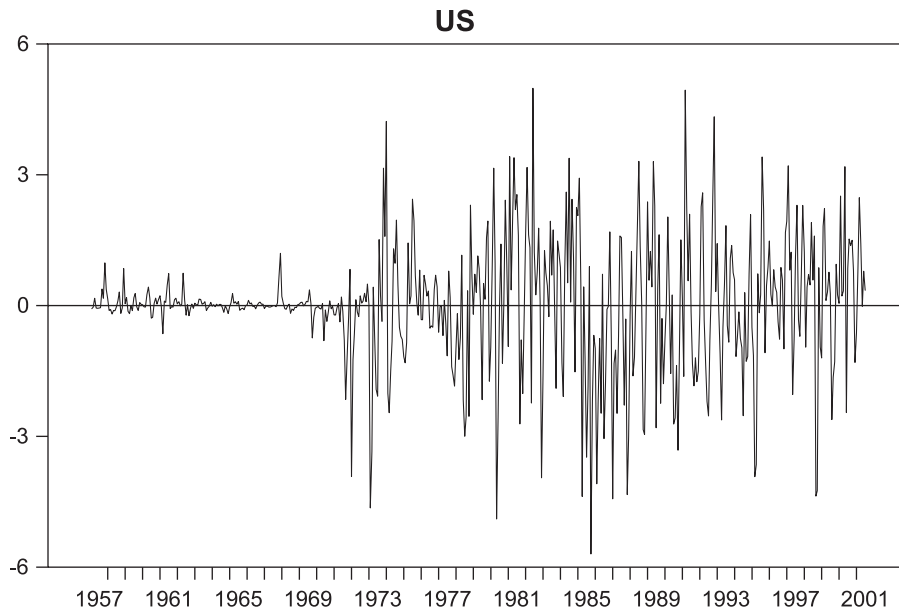


Fig. 1. Difference of the log monthly US nominal effective exchange rate.

Exchange-rate variability has been the subject of intense study, but has been usually considered as an exogenous factor, rather than something that itself needs to be explained. Thus, a vast literature has investigated whether the much greater post-Bretton Woods volatility has affected the behavior of key macroeconomic variables using various data sets and econometric methods. Overall, the evidence seems to suggest that there have been no such effects, or that they are too small to measure.<sup>1</sup> For example, [Baxter and Stockman \(1989\)](#) find that the exchange-rate regime does not influence the behavior of industrial production, consumption, exports, and imports for a sample of 49 countries. Using a very different methodology, [Gagnon \(1993\)](#) similarly reports that exchange-rate variability has an insignificant effect on the level of trade. More recently, perhaps because of the consensus view summarized above and the arrival of the euro, the focus has shifted on the economic effects of currency unions and dollarization (real and prospective). This literature is also growing very rapidly, but the consensus so far is that monetary integration has sizable trade effects. For example, [Rose \(2000\)](#) and [Tenreiro and Barro \(2003\)](#) are among the studies that conclude that a common currency enhances trade between economies.<sup>2</sup>

While the effects of different exchange-rate regimes on the economy are of great interest and will doubtless continue to be investigated, the present paper looks at exchange-rate variability from a different perspective. Instead of examining the consequences of exchange-rate volatility, our goal is to shed light on its causes. In particular, using an innovative technique recently employed by [Stock and Watson \(2002\)](#) in their study of business-cycle volatility, we will try to ascertain whether post-Bretton Woods variability in exchange rates has been the result of a less stable structure (the propagation mechanism) or more violent shocks (the impulses). Using monthly data from the US, Canada, Germany,

<sup>1</sup> IMF (1984) summarizes some of the early evidence.

<sup>2</sup> [Edwards and Magendo \(2003\)](#) extend the analysis by looking at the effects of dollarization and currency unions on growth, volatility, and inflation.

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