



# Measuring monetary policy interdependence

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## Abstract

This paper measures the degree of monetary policy interdependence between major industrialized countries from a new perspective. The analysis uses a special data set on central bank issued policy rate targets for 14 OECD countries. Methodologically, our approach is novel in that we separately examine monetary interdependence due to (1) the coincidence in time of when policy actions are executed from (2) the nature and magnitude of the policy adjustments made. The first of these elements requires that the timing of events be modeled with a dynamic discrete duration design. The discrete nature of the policy rate adjustment process that characterizes the second element is captured with an ordered response model. The results indicate there is significant policy interdependence among these 14 countries during the 1980–1998 sample period. This is especially true for a number of European countries which appeared to respond to German policy during our sample period. A number of other countries appeared to respond to U.S. policy, though this number is smaller than that suggested in preceding studies. Moreover, the policy harmonization we find appears to work through channels other than formal coordination agreements.

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*JEL classification:* F4; E4; E5

*Keywords:* Autoregressive conditional hazard; Dynamic discrete duration data; Interest rate target; Monetary policy coordination

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## 1. Introduction

This paper investigates the empirical regularities of monetary policy setting among a sample of 14 industrialized countries, with special focus on the international interdependence among these policies. A new empirical approach is proposed, which

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avoids the pitfalls implied by the VAR approach that traditionally has been used to address this issue. This approach allows us to look in a new way at the nature of policy coordination and the relative leadership roles played by the U.S. Federal Reserve, the Bank of Japan, and the German Bundesbank.

International monetary policy coordination has become a subject of renewed interest of late. In particular, [Obstfeld and Rogoff \(2002\)](#) initiated a re-exploration of international policy coordination using models with microeconomic foundations, representing a significant methodological departure from past literature. They conclude that in this context the welfare gains of coordination are likely to be quantitatively small in comparison to the gains from domestic stabilization policy. In rebuttal, subsequent theoretical work has suggested a variety of economic features that could potentially generate greater motivation for nations to coordinate their monetary policies. See for example, [Benigno \(2002\)](#), [Canzoneri et al. \(2001\)](#), and [Clarida et al. \(2002\)](#). Given this theoretical controversy, it is natural to ask the empirical question of how much coordination we observe in actuality.

There is a history of empirical research on this question. Studies focusing on the major industrial countries generally find evidence that the U.S. acts as a leader for policy makers in certain countries, but the mechanisms through which this coordination takes place are often unclear. (See [Dominguez, 1997](#); [Furman and Leahy, 1996](#); [Chung, 1993](#); [Burdekin and Burkett, 1992](#); [Burdekin, 1989](#); and [Batten and Ott, 1985](#).) Another branch has focused on coordination among European countries, generally finding that Germany had a limited leadership role among European countries prior to monetary union. (See [Garcia-Herrero and Thornton, 1996](#); [Katsimbris and Miller, 1993](#); [Biltoft and Boersch, 1992](#); [Karfakis and Moschos, 1990](#); and [von Hagen and Fratianni, 1990a,b](#).)

Our paper represents a significant methodological departure from this preceding empirical literature. We build upon the recently developed methodology of [Hamilton and Jordà \(2002\)](#), which has been successfully employed to study monetary policy in the U.S. We extend this methodology to a set of countries, and we explicitly allow for interdependence among these national policies. Our approach is based on a novel data set on overnight, interbank interest rate targets that central banks in our sample use to communicate and operationalize monetary policy.

Methodologically, we first argue against traditional time series techniques based on dynamic conditional correlations in semi-structural vector processes, which suffer from the common identification assumptions that mar the monetary vector autoregression (VAR) literature. Perhaps more importantly however, we show via Monte Carlo experimentation that the peculiar statistical properties that policy rate targeting imbue on market interest rates tend to severely distort these measures of association. In particular, these experiments demonstrate that, for example, Granger causality tests often will misrepresent the true nature of existing monetary policy linkages that are measured with market interest rate data.

These methodological pitfalls prompt us to pursue a more modest approach but one which is immune to the deficiencies described above. In particular, our goal is to determine whether G-3 policy moves help predict the timing of domestic policy adjustments and the direction in which interest rates are modified, all conditional

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