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Monetary policy effectiveness in China: Evidence from a FAVAR model[☆]

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We use a broad set of Chinese economic indicators and a dynamic factor model framework to estimate Chinese economic activity and inflation as latent variables. We incorporate these latent variables into a factor-augmented vector autoregression (FAVAR) to estimate the effects of Chinese monetary policy on the Chinese economy. A FAVAR approach is particularly well-suited to this analysis due to concerns about Chinese data quality, a lack of a long history for many series, and the rapid institutional and structural changes that China has undergone. We find that increases in bank reserve requirements reduce economic activity and inflation, consistent with previous studies. In contrast to much of the literature, however, we find that central-bank determined changes in Chinese interest rates also have substantial impacts on economic activity and inflation, while other measures of changes in credit conditions, such as shocks to M2 or lending levels, do not once other policy variables are taken into account. Overall, our results indicate that the monetary policy transmission channels in China have moved closer to those of Western market economies.

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1. Introduction

China's economy has experienced remarkable structural and institutional change in recent decades. This change may affect the efficacy of counter-cyclical monetary and fiscal policy for Chinese economic activity and inflation. In this paper, we examine whether or not that is the case in the context of a factor-augmented vector autoregression, or FAVAR, along the lines of [Bernanke and Boivin \(2003\)](#) and [Bernanke et al. \(2005\)](#). Most previous studies have found that market-based monetary policies, such as interest rates and reserve requirements, are unimportant in China relative to more direct, blunt credit policies such as “window guidance” for commercial bank lending levels. In contrast to this literature, we find, using recent data, that interest rates and reserve requirements are more important than direct quantity measures of lending (which, on their own, are insignificant). These results suggest that ongoing institutional changes in China may have led the monetary policy transmission mechanism in that country to have become more similar to that in the U.S. and other Western market economies (see, e.g., [Bernanke and Blinder, 1992](#); [Christiano et al., 1999](#)).

Studying the monetary transmission mechanism in China raises two interesting challenges that motivate our approach of using a FAVAR model on relatively recent data. First, the well-known skepticism about the quality of Chinese data—which even Vice Premier Li Keqiang famously admitted were unreliable³—makes a FAVAR very appropriate. That is, we take a broad and expansive approach and use a large number of series associated with Chinese economic activity and inflation to estimate the true underlying, latent values of these series. Second, the rapid pace of institutional and structural change in China motivates our focus on the recent period, which includes both the Great Recession and the ensuing recovery. To the extent that China's economy, as well as its policy and banking institutions, have become more market-oriented, it is reasonable to think that the monetary transmission mechanism might have evolved as well.

In terms of Chinese data, the quality of the reported output figures has long been under scrutiny (e.g., [Holz, 2003, 2008](#); [Nakamura et al., 2014](#)). One approach, which we follow in our FAVAR model, is to focus on a variety of measures of economic activity. For example, Vice Premier Li claimed that he looked at several indicators such as electricity production, rail cargo shipments, and loan disbursements to gauge Chinese economic activity. In a recent study, [Fernald and Spiegel \(2013\)](#) validate the information content of a range of indicators of Chinese economic activity relative to an external, independent statistical measure of that activity—namely, exports to China and Hong Kong, as reported by their major trading partners (the United States, European Union, and Japan). This measure should be highly correlated with true economic activity (either through domestic absorption or through re-processing for export), but is not subject to manipulation or bias by Chinese officials. Fernald and Spiegel report that a number of the alternative indicators they examine are more informative than is GDP as measures of economic activity. Moreover, they find that these alternative indicators typically do better in combination—i.e., taking the first principal component of a set of indicators. They find that a small set of indicators are particularly informative (electricity usage, new floor space added, China's reported exports, and raw materials used), but the more general point is the informational content of the economic indicators other than GDP.

A FAVAR approach is particularly well suited to examine monetary policy effectiveness when output and inflation are imperfectly observed, latent variables. Under this approach, one considers a large number of economic indicators to estimate the unobserved latent variables that drive the systematic components of the economy. This approach also minimizes ad hoc decisions about which data to include in a VAR and which not. Indeed, even in the U.S. context with relatively reliable data, [Bernanke and Boivin \(2003\)](#) and [Bernanke et al. \(2005\)](#) note that series such as output and inflation are not directly observable—there are a variety of measures of each. They argue that the FAVAR approach leads to better empirical estimates.

Applied to China, the dynamic factor model approach distills a diverse set of economic indicators into underlying factors representing Chinese economic activity and inflation. The factor-model logic

³ [Wikileaks \(2007\)](#).

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