Empirical Analysis on Unconventional Monetary Policies and Issues around Policy Conduct

Naoko Hara

Graduate School of Economics, Hitotsubashi University

2021

Introduction

Central banks conduct monetary policy amid of uncertainty about the state of the economy. Information available in real time is imperfect, and the recent financial crisis forces policymakers to decide policy actions in a highly uncertain economic environment with the presence of the effective lower bound.

Concerning the issue on imperfect information, major macroeconomic data available in real time are subject to revision. Since upcoming data revisions are hardly predictable, economic agents cannot have perfect information on the current and past state of the economy. Accordingly, both policymakers and private agents have to make decisions based on less accurate information. The data uncertainty about the state of the economy may affect decision-making of policymakers by influencing the private sector's optimization. While the problem of data uncertainty is important in the practice of monetary policy, the impacts of data uncertainty on macroeconomic models are far less explored.

The recent financial crisis has heightened uncertainty about future monetary policy in a very low interest rate environment. After the crisis erupted, central banks in advanced economies have adopted unconventional measures of monetary policy to stabilize the financial system and spur economic recovery. Several economies including euro area and Japan have embarked on negative interest rate policy, and major

advanced economies have been utilizing large asset purchase programs.

Negative interest rate policy marks a dramatic shift from conventional policies with positive policy rates. However, it is unclear whether the move from zero interest rate policy to negative interest rate policy reduces the binding constraint on monetary policy. A vast literature studies when and how well the asset purchase programs by central banks work. Recent studies argue possibility of state-dependence of asset purchase programs, though there is yet no consensus on this issue.

The aim of my dissertation is twofold. First, I intend to uncover how data uncertainty about current and past state of the economy influences business cycles. I shed light on the effects of data uncertainty about labor productivity, which is obviously a key variable in monetary policy decisions. Second, I aim to explore the effectiveness of unconventional monetary policies in a changing environment after the financial crisis. I focus on two popular measures of unconventional monetary policy, namely, negative interest rate policies and asset purchase programs.

My dissertation is organized as follows. Chapter 1 summarizes the literature and presents my motivation and research questions. Chapter 2 investigates influence of data uncertainty on business cycles, which plays an important role in monetary policy conduct. Chapter 3 studies negative interest rate policies conducted in several advanced economies. Chapter 4 examines changes in the effectiveness of unconventional monetary policies in the United States since the recent financial crisis. Chapter 5 concludes my dissertation and suggests interesting avenues for future research. Abstracts of Chapters 2, 3, and 4 are presented as follows.

Chapter 2: Noisy Past and Business Cycles

This chapter uncovers the role of measurement errors in past productivity data in business cycles. To this end, I construct a structural VAR model with different vintages of productivity data to identify noise components by revision round. The main findings are twofold. First, noise contained in real-time U.S. labor productivity data signifi-

cantly affects the economy in the short run. Noise has qualitatively the same impacts as demand shocks. This is particularly evident for long-lived noise which even remains in revised data available a few years after the first release. Second, responses of real-time labor productivity data to fundamental shocks on impact are much smaller than those of the final data. Data revisions adjust the underestimation of the immediate responses only gradually. These findings suggest that measurement errors in productivity play an important role in business cycles for a long period of time.

Chapter 3: Negative Interest Rate Policy and the Influence of Macroeconomic News on Yields

This chapter studies the influence of surprises in domestic and U.S. macroeconomic announcements on daily bond yields over the January 1999 to January 2018 period for four advanced negative interest rate policy (NIRP) economies – Germany, Japan, Sweden, and Switzerland. I find that the influence of surprises in macroeconomic announcements is for all of the four NIRP countries either noticeably weaker or non-existent during the NIRP period than during the preceding zero interest rate policy (ZIRP) period. My empirical results show that decreasing economic policy uncertainty does not have significant impacts on the sensitivity during the NIRP period. These findings suggest that NIRP is associated with a lower bound that is no less constraining than the ZIRP lower bound.

Chapter 4: The Effects of Asset Purchases and Normalization of U.S. Monetary Policy

This chapter examines changes in the effects of unconventional monetary policies in the United States. To this end, I estimate a Markov-switching VAR model with absorbing regimes to capture possible structural changes. My results detect regime changes around the beginning of 2011 and in the middle of 2013. Before 2011, the U.S. large-

scale asset purchases (LSAPs) had relatively large impacts on the real economy and prices, but after the middle of 2013, their effects were weaker and less persistent. In addition, after the middle of 2013, which includes the monetary policy normalization period, the asset purchase (or balance sheet) shocks had slightly weaker effects than during the early stage of the LSAPs, but stronger effects than during the late stage of the LSAPs. By contrast, interest rate shocks had insignificant effects on the real economy and prices. Finally, the results suggest that the positive responses of durables and capital goods expenditures to interest rate shocks weakened the negative impacts of interest rate hikes after the middle of 2013 including the period of monetary policy normalization.