

Essays on Unemployment, Financial Frictions, and Monetary Policy

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論 文 内 容 の 要 旨

The thesis argues that nothing in business cycle and monetary policy analyses makes sense except in the light of unemployment. Seen in that light, neglected roles of nonstationary unemployment in Japan turn out to be of highest priority for the policy design of the Bank of Japan (Essay 1), Keynesians' celebrated downward wage rigidities lose its ground to financial frictions (Essay 2), and the holy grail of the dual mandate by US Federal Reserve becomes no longer meaningful (Essay 3). We create that light by exclusively thus uniquely making its first theoretical as well as empirical contributions to the growing literature of dynamic stochastic general equilibrium (DSGE) models of involuntary unemployment pioneered by Galí (2011) and Galí, Smets, and Wouters (2012), in the form of seven chapters.

Chapter 1 introduces our three defining research questions centering around unemployment—*Why is Japanese unemployment still so low, and what are its implications for policy rule?* (Essay 1), *What is the source of the US unemployment fluctuations: labor market or financial shocks?* (Essay 2), and *Is the dual mandate of US Federal Reserve achievable?* (Essay 3).

Chapter 2 grounds our research questions by a through but critical survey on the evolution of DSGE models before and after the 2008 financial crisis, with an introduction to the theory, solution, and estimation of the Basic New Keynesian DSGE model in Chapter 3. Out of our efforts to understand the post-crisis macroeconomy and its unprecedentedly slow recovery emerge the nonnegligible roles of unemployment overly absent in the pre-crisis DSGE models, and the subsequent chapters support our major claim by answering those three questions on monetary policy design for Japan, the 2008 financial crisis, and the US policy trade-off debate.

The strikingly low and nonstationary unemployment in Japan—albeit its presumable policy relevance—remains a puzzle due in part to the Bank of Japan's solo mandate of price stability. Chapter 4 (Essay 1) contributes to fill this gap by developing a DSGE model à la Galí, Smets and Wouters (2012) with the Japanese unemployment rate. The latter allows for separately identifying wage markup and labor supply shocks, thus opening the door to revisit key issues unless otherwise made possible—*lost decade*, unobservable output gap, and its policy (*Taylor rule*) implications. We find that the identified wage markup shocks are the sole driver of Japanese unemployment, in stark contrast to its US counterpart behind which demand (risk premium) shocks also play nonnegligible roles (Galí, Smets, and Wouters, 2012). The identification also confirms lost decade, but the effect of statutory reduction in hours worked is much smaller than

Hayashi and Prescott (2002). As our output gap estimated with unemployment shows nontrivial nonstationarity consistent with evidence from Euro Area (Galí, 2011), we finally show that Taylor rules with unemployment outperform conventional rules augmented with the stationary detrended GDP. Our findings thus suggest neglected but nonnegligible roles of the nonstationary unemployment rate in business cycle and monetary policy analysis for Japan.

Macroeconomists typically attribute resilient unemployment to *downward wage rigidities* of Keynes (1936). Yet, many financial models after the 2008 crisis question this postulation. Chapter 5 (Essay 2) contributes to reconcile this fundamental macroeconomic debate by disentangling labor market and financial shocks. To do so, we propose the first DSGE model of involuntary unemployment by Galí, Smets, and Wouters (2012) augmented with the financial accelerator of Bernanke, Gertler, and Gilchrist (1999). We argue that the answer is financial shocks—at the onset of the crisis, the model shows that the widening consumption and financial wedges under loose monetary policy result in extraordinary contractions in demand. After those periods, contractionary fiscal and monetary policies due to the zero lower bound on the nominal rate, as well as productivity shocks and missing disinflation, lead to the secular fall of the output gap, i.e., the slow recovery. Throughout, our findings imply the irrelevance of labor market disturbances in this major policy debate, thus lending key empirical support to the abandonment of traditional wage rigidities' view such as Galí, Smets and Wouters (2012), in favor of financial frictions' explanation of, for instance, Christiano, Motto, and Rostagno (2015).

Since the *stagflation* in 1970s, US Federal Reserve pursues its ultimate mantra: Is *dual mandate*—stabilizing inflation and unemployment—achievable?, for which the structural but empirical framework still remains nascent. Chapter 6 (Essay 3) makes its first contribution to this nontrivial policy trade-off—optimal policy—literature to provide that missing framework. We achieve this by carefully developing involuntary unemployment of Galí (2011) with formal use of welfare loss function in spirit of Rotemberg and Woodford (1997), consistent with the existence of stochastic balanced growth path. Our structural model allows in turn for the first empirical assessment of dual mandate, the sources behind the latter, and historical utility losses. Our estimated model shows that the answer is no—dual mandate is not achievable because tension between these two policy objectives remains considerable due to exogenous movements in workers' market power. Our counterfactual exercises show in the absence of the latter emerges no policy trade-off with effectively minimal welfare losses. Our findings are consistent with some seminal contributions in optimal policy—with no unemployment variable—of the *divine coincidence* (Blanchard and Galí, 2007) and the *trinity* (Justiniano, Primiceri, and Tambalotti, 2013), and our key contribution lies in its direct measurement of the stability of unemployment and welfare losses conceived by US households.

Chapter 7 concludes to provide a number of promising light for the future DSGE research programs illuminating out of our critical implications on the post-crisis macroeconomics of unemployment, financial frictions, and monetary policy.