



Modern Challenges to Monetary Policy
G.W. Goy

Summary

This thesis aims to identify and better understand four of today's challenges to monetary policy. Each chapter focuses on one particular such challenge and analyzes its implications for monetary policy.

In Chapter 1, we document a positive co-movement between the regional dispersion in inflation expectations and trade imbalances in the euro area. To reconcile this observation, we propose a Dynamic Stochastic General Equilibrium model in which agents' expectations are largely based on domestic variables, and less so on foreign variables. This informational friction gives rise to cross-country heterogeneity in expectations. We find that if expectations are home biased, country-specific disturbances generate larger and more prolonged macroeconomic imbalances than if expectations are rational. This result arises from a tug-of-war between a pro-cyclical real interest rate channel and a counter-cyclical real exchange rate channel that jointly determine the size and duration of macroeconomic imbalances in a monetary union. The relative strength of the two channels depends, *inter alia*, on how expectations are formed. The backward-looking nature of expectations assumed in our model reinforces the feedback between inflation and inflation expectations, thereby strengthening the real interest rate channel. Moreover, as expectations are home biased, agents do not (fully) incorporate the relative change in domestic versus foreign prices and thereby underestimate changes in the real exchange rate. Therefore, the home bias in expectations weakens the real exchange rate channel and slows down the process of macroeconomic realignment. Finally, we show that more aggressive monetary policy can help to anchor inflation expectations, thereby reducing the destabilizing effects of a home bias in expectations.

Chapter 2, studies the macroeconomic effects of central bank forward guidance when central bank credibility is endogenous. To this extent, we develop a stylized New Keynesian model with an occasionally binding effective lower bound constraint on nominal interest rates and heterogeneous and boundedly rational households. The latter are assumed to form their expectations based on simple heuristics between which they switch endoge-

nously depending on their respective forecasting performance. While the first heuristic incorporates central bank announcements in the expectation formation process, the second does not, ultimately giving rise to a time-varying measure of central bank credibility. In this model, the central bank forecasts do not take the time-variation in the distribution of aggregate expectations into account. In this framework, we extend the central bank's toolkit to allow for the publication of its own forecasts (Delphic guidance) and the commitment to a future path of the nominal interest rate (Odyssean guidance). We find that both Delphic and Odyssean forward guidance increase the likelihood of recovery from a liquidity trap. Even though Odyssean guidance alone appears more powerful in inducing recovery, we find it to increase ex post macroeconomic volatility and thus reduce welfare.

Chapter 3 shows that—as highlighted by the euro area sovereign debt crisis—country risk premium shocks have adverse economic effects, not only in emerging economies, but also advanced economies. Using a Bayesian Panel Vector Autoregression model for a panel of advanced economies, we find that increases in the risk premium lower output under monetary union, yet not in countries with flexible exchange rates and independent monetary policies. While risk premium shocks may not be the main driver of economic activity in developed economies, a historical decomposition illustrates that these shocks can hardly be neglected either. We then turn to a two-country New Keynesian model to study the transmission mechanism of risk premium shocks and show that capital controls can substantially attenuate their effects. In a subsequent welfare analysis, we answer the normative question of whether imposing capital controls can be welfare enhancing across exchange rate regimes and subject to different shocks. While all regimes benefit from capital controls when hit by a risk premium shocks (with countries in a monetary unions benefiting most and countries with flexible exchange rates least), the welfare implication generally hinge on the nature of the shock and the prevailing exchange rate regime.

Finally, in Chapter 4, we incorporate a dynamic term-structure model into a small semi-structural macro-model (as in Laubach and Williams, 2003) to jointly estimate potential output growth, output gaps, core inflation, real equilibrium interest rates, and term premia for the US and the euro area. We illustrate that exploiting cross-sectional information in yields and closing the original macro-model with a short-rate equation increases the precision of natural rate estimates. We use a Bayesian approach to estimate all model components simultaneously. Ultimately, we find that taking into account secular macroeconomic trends, the decline in yields observed since the 1980s appears more due to a fall in equilibrium interest rates and less to a decline in term premia than typically reported. Consistent with Bauer and Rudebusch (2019), we find that term premia, in fact,

exhibit cyclical behavior over the business cycle instead of a secular trend. Looking ahead, the protracted downward trend in our natural rate estimates indicates elevated risks of monetary policy becoming constrained by the lower bound on nominal interest rates in the future.