

4 Monetary Policy in the New Keynesian Model

Chapter 2 concluded that it is unlikely that the differences between Keynesians and monetarists can be resolved on empirical grounds. However, spurred by the rational expectations revolution macroeconomic theory has come a long way since the heyday of the controversy between the Keynesian and monetarist camps. In particular, in the late 1990s a convergence between RBC and New Keynesian models emerged, which Goodfriend and King (1997: 255) called the New Neoclassical Synthesis: “The New Neoclassical Synthesis is defined by two central elements. Building on new classical and RBC analysis, it incorporates intertemporal optimization and rational expectations into dynamic macroeconomic models. Building on New Keynesian economics, it incorporates imperfect competition and costly price adjustment.” This modeling approach is often also called New Keynesian, which is the label we will adopt in the remainder of this study, but it could also be called with equal justification New monetarist.¹⁴⁵ Foreshadowing the main results of this chapter, this type of model features a Keynesian transmission mechanism, but many of its policy implications are similar to monetarist policy prescriptions.

In a log-linearized version, the model typically is comprised of an expectational Phillips curve, a forward-looking IS curve, and an interest rate equation describing the policy rule of the central bank.¹⁴⁶ In the first section of this chapter, these equations are going to be derived, with special emphasis placed on providing the intuition behind the New Keynesian model. Next, Section 4.2 simulates a standard New Keynesian model to investigate the monetary transmission mechanism and the source of business cycle fluctuations in the New Keynesian framework. Based on these results, Section 4.3 is going to explore the scope for stabilization policy in New Keynesian models, and discuss the implications for the macroeconomic policy debate in Germany.

It will become clear in this chapter that the New Keynesian monetarist policy implications are, to some extent, due to the fact that the standard New Keynesian model is strictly linear, whereas Chapter 2 has shown that traditional Keynesian models have strong nonlinear features. Hence, the next chapter is going to extend

¹⁴⁵ See Ball and Mankiw (1994a: 132) and the discussion in De Long (2000).

¹⁴⁶ According to McCallum (2001a), this type of model represents the standard model used for macroeconomic analysis. For a nontechnical review, see King (2000). An extensive derivation and discussion is provided in Woodford (2002). The seminal contribution on the analysis of monetary policy in New Keynesian models is Clarida et al. (1999).

the New Keynesian framework by introducing nonlinearities and discuss the implications for stabilization policy. Moreover, the final chapter is going to revisit the natural rate hypothesis, which is another cornerstone of the New Keynesian paradigm.

4.1 Deriving the Core Equations of the New Keynesian Model

The standard version of the New Keynesian model is comprised of three equations. These are the New Keynesian Phillips curve determining aggregate supply, aggregate demand is determined by the New IS curve, and the model is closed by the interest rate rule describing the behavior of the central bank.

4.1.1 The New Keynesian Phillips Curve

The starting point of the analysis is the assumption of monopolistic competition.¹⁴⁷ There is a continuum of firms indexed by $i \in [0, 1]$, each producing a differentiated good $Y_t(i)$ that it sells at a nominal price $P_t(i)$. The aggregate output and price levels are denoted as Y_t and P_t , respectively. Monopolistic competition implies that each firm faces a demand curve for its product given by

$$(4.1) \quad Y_t(i) = \left(\frac{P_t(i)}{P_t} \right)^{-\varepsilon} Y_t,$$

where ε denotes the price elasticity of demand. For the production function a Cobb–Douglas type technology is assumed, which abstracts from endogenous accumulation of capital. This is customary in New Keynesian models, partly because of the observation that at the business cycle frequency movements in the capital stock and aggregate output are only weakly correlated, and partly because models with and without an endogenous capital stock can be calibrated to predict very similar output and inflation dynamics in response to the same kind of monetary policy shock.¹⁴⁸ This suggests that many policy-relevant issues can be

¹⁴⁷ This discussion draws on Gali et al. (2001), King (2000), and Mankiw (2001).

¹⁴⁸ For a discussion on the link between the capital stock and aggregate output see McCallum and Nelson (1997). They argue that to a large part the correlation is low because a typical year's investment is very small in relation to the existing stock of capital. Regarding the second point, see Woodford (2002: Section 4.5). However, Woodford also notes that the transmission mechanism behind the similar output