The New IS-LM Model

Robert G.King introduced the New IS-LM model and to discuss how it leads to strong conclusions about monetary policy in four important areas.

In summary, the New IS-LM model instructs the central bank to target inflation. It indicates that there are substantial limits on the long-run influence that the monetary authority can have on real economic activity and that there are also constraints on its choice of policy rule. But the New IS-LM also indicates that the monetary authority can affect macroeconomic fluctuations through its choice of the monetary policy rule, as well as via monetary policy shocks.

King has highlighted that the New IS-LM model is a small macroeconomic model designed to describe the behavior of economy-wide variables that enter in most discussions of monetary policy. There are five endogenous variables: the log level of real output/spending *y*, the log price level *P*, the real interest rate *r*, the inflation rate *π*, and the nominal interest rate *R*.

Relative to the original model of Hicks, the New IS-LM model is different in that it makes the price level an endogenous variable, which is influenced by exogenous shocks and the monetary policy rule. In the language of Friedman (1970) and other monetarists, the New IS-LM model views the price level as a monetary phenomenon rather than as an unexplained institutional phenomenon. In terms of formal modeling, the idea that the price level is a monetary phenomenon is represented in two ways. First, the model cannot be solved for all of the endogenous variables without the specification of a monetary policy rule. Second, under a money stock rule, even though some individual prices are sticky in the short run, the price level responds to exogenous, permanent changes in the level of the money stock in both the short run and the long run. But, since the 1970s, textbook presentations of the IS-LM model have added a pricing block or aggregate supply schedule, which makes the price level endogenous. The New IS-LM model also incorporates expectations in ways that the traditional IS-LM model did not. But the rational expectations IS-LM model of Sargent and Wallace (1975) also incorporated the influence of expectations of inflation into both the Fisher equation and the aggregate supply schedule.

To help us understand the inflation variable that is incorporated into the King’s new IS-LM, he shows the core equation as follows:

King’s finding of the new IS-LM models by adding Phillip’s curve phenomenon on inflation expectation.

The forward-looking IS equationmakes current real spending *yt* depend on the expected future level of real spending*Etyt*+1 and the real interest rate *rt* . There is also an aggregate demand shock *xdt* : a positive *xdt* raises aggregate spending at given levels of the endogenous determinants *Etyt*+1 and *rt* .5

*IS* : *yt* = *Etyt*+1 − *s*[*rt* − *r*] + *xdt* ------------------------------------------------------------equation 4

The parameter*s >* 0 determines the effect of the real interest rate on aggregate demand: If *s* is larger than a given rise in the real interest rate causes a larger decline in real demand. The parameter *r >* 0 represents the rate of interest which would prevail in the absence of output growth and aggregate demand shocks. The new IS equation is described as forward-looking because *Etyt*+1 enters on the right-hand side.

The Fisher equationmakes the nominal interest rate *Rt* equal to the sum of the real interest rate *rt* and the rate of inflation that is expected to prevail between t and t+1, *Etπt*+1.

*F* : *Rt* = *rt* + *Etπt*+1 -------------------------------------------------------------------------equation 5

This conventional specification of the Fisher equation omits any inflation risk premium in the nominal interest rate.

The expectational Phillips curverelates the current inflation rate *πt* to expected future inflation *Etπt*+1, the gap between current output *yt* and capacity output *yt ,* and an inflation shock *xπt*

*PC* : *πt* = *βEtπt*+1 + *ϕ(yt* − *yt )* + *xπt-------------------------------------------equation 6*

The parameter *β* satisfies 0 ≤ *β* ≤ 1. The parameter *ϕ >* 0 governs how inflation responds to deviations of output from the capacity level. If there is a larger value of *ϕ* then there is a greater effect of output on inflation; in this sense, prices may be described as adjusting faster—being more flexible—if *ϕ* is greater.

Using the definition of the inflation rate *πt* = *Pt* −*Pt*−1, this specification might alternatively have been written as *Pt* = *Pt*−1 + *βEtπt*+1 + *ϕ(yt* − *yt )* + *xπt* . This alternative form highlights why (6) is sometimes called a “price equation” or an “aggregate supply schedule.” It is a price equation in the sense that it is based on a theory of how firms adjust their prices. It is an aggregate supply schedule because it indicates how the quantity supplied depends on the price level and other factors. But this article uses the Phillips curve terminology because this is the dominant practice in the new and old IS-LM literature. The relationship between the output gap and the steady-state rate of inflation gap is given by *y* − *y* = 1−*β* *ϕ π* according to this specification. In fact, experiments with fully articulated models that contain the structural features which lead to (6)—including those of King and Wolman (1999)—suggest a negligible “long-run effect” at moderate inflation rates. Prominent studies of the monetary policy implications of the New IS-LM model—including that of Clarida, Gali, and Gertler (1999)—accordingly impose the *β* = 1 condition in specifying (6). In this article, *β* will be taken to be less than but arbitrarily close to one.

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