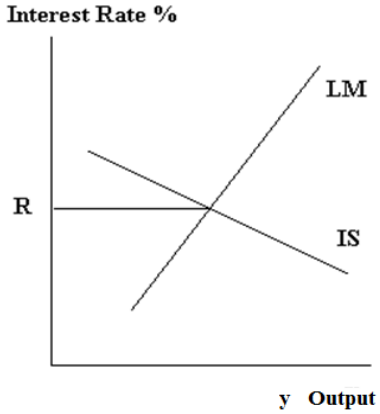
# Why IS/LM is Irrelevant and Wrong: an explanation, if it is needed

What is IS/LM? The General Theory of Employment, Interest and Money that Keynes wrote in 1936 had some analytically loose ends. In his 1937 article "Mr Keynes and the Classics: A Suggested Interpretation" Nobel laureate economist Sir John Hicks developed a precise model to tie up these loose ends. He expanded and converted Keynes framework i.e. Keynes multiplier equations etc into the IS/LM model. In Hicks' model, the IS curve plots the equilibrium of Investment (I) and Savings (S) while LM plots the equilibrium between money demand or Liquidity (L) and Money supply (M). Hence the terms IS and LM. [Hicks called the second the LL curve, but it is generally called the LM curve].

The IS/LM model is the central component of most macroeconomics texts.[1] The intersection of the IS and LM curves are supposed to simultaneously determine the interest rate (R) and real output (y) as shown in the graph below. Just as intersecting supply and demand curves determine Price and Quantity in micro, the intersecting IS and LM curves as supposed to determine R and real output y .




What is wrong with it? Very many things. We can classify the problems with IS/LM as Level one, Level two etc. depending on whether the problems are basic or advanced, and on how wrong they are, starting from very wrong (level zero) to lesser mistakes and problems.

Level Zero Critique: To begin with, income is a flow (say GDP per quarter) while money is a stock, so the time dimension on the x axis is not clear. To make sense, two intersecting curves e.g supply and demand curves for apples should be over the same period e.g day or month etc. Same for IS/LM.

Level Zero critique: IS/LM fundamentally misrepresents how monetary policy is conducted under normal circumstances. By normal circumstances I mean when interest rates are positive i.e. before the 2008 financial crisis. Note that in 1936 & 1937, when Keynes and Hicks wrote, short rates were about 50 and 15 basis points in UK and USA respectively i.e. close to zero. (A 100 basis points is one percent).

Close to zero rates reflect abnormal circumstances, which may nevertheless continue for long, just as in Japan since late 1990s and USA etc since late 2008. In this situation, monetary policy cannot lower the policy rate. The central bank can only increase the quantity of reserves, which hence becomes the policy

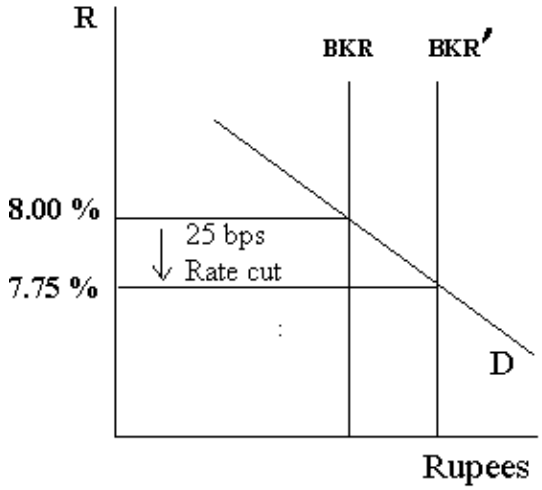
[1] There are textbooks that do not use IS/LM. John Taylor and Akila Weerapana and Bernanke and Frank develop an alternate model with a policy rate, similar to my Chapter 9. Many economists teaching macroeconomics reject the IS/LM framework for different reasons. John Hicks himself renounced IS/LM in an article in 1980, but not for the reasons discussed here.

variable. This broadly corresponds to what is now called 'quantitative easing'. The limited relevance of IS/LM for such abnormal circumstances calls for separate analysis.

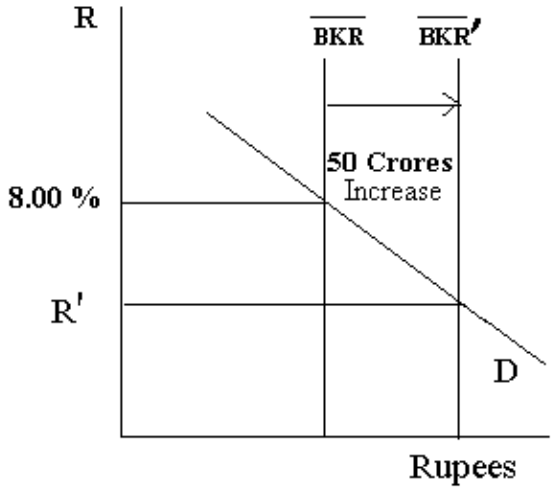
The discussion in Chapter 8 of my book MIFA and here pertains to normal circumstances. As drawn in MIFA Chart 8.3.1 "Targeting Reserves versus Targeting the Interest Rate" the central bank has two alternative options. It can fix R and let Bank Reserves vary endogenously. This is what is normally done. The other option is that it can fix the relevant measure of Bank Reserves (let us call it **BKR)** and let R vary endogenously in response to shifts in D i.e. the demand curve for Bank Reserves (BKR).

Monetary policy changes: In the first case below the central bank decides the policy rate change e.g. Jan 15th 2015 when the Reserve Bank of India (RBI) lowered the repo rate from 8% to 7.75% (attachment). The central bank then supplies whatever extra BKR are required to clear the market at the new rate. BKR is thus endogenous. However, suppose RBI announces increase in say Rs 50 crs of BKR. This is similar to a downward shift in the LM curve. (The difference is that here we look at demand and supply just of bank reserves BKR in determining R, but the LM curve looks at total demand and money supply in the whole economy, which is misleading.) When BKR goes up by 50 crs, R will fall endogenously to some new rate R' shown below, depending on the slope of the demand curve for BKR.

Policy Change in the Real World




Policy Change in the IS/LM approach




According to the IS/LM model policy is conducted the second way.[2] This is factually wrong. Ordinary persons who watch TV or read the newspaper know that monetary policy is about interest rate changes. Fortunately, some macro economists are also aware of this level zero problem with IS/LM! The noted Berkeley macroeconomist Brad de Long in an article "A Macroeconomics Textbook Manifesto" as long back as 2000 wrote down on his blog what he considered should be seven features of a good text.[3] Here I cite and comment on the relevant feature five of his article,

Point 5 from Brad de Long's textbook Manifesto "Downplay the LM curve"... You can see the contortions that people get themselves into... convince students of the applicability of the IS-LM framework for understanding macroeconomic events. Smart students notice this incongruity. They wonder what is going on. Other students don't

[2] In the IS/LM model the variable is not the demand for bank reserves as here but something broader i.e the total demand for money by the public, a complicated issue since there is no clear definition of what is the money supply. In my Chap 8 there is a clear variable: BKR. We can ignore this Level one issue right now.

[3] I have written a fuller Comment/Response to de Long, posted on my website, or available upon request. Coincidentally, an alternative to IS/LM with the interest rate as the policy variable, I first developed in a study for RBI in June 2000.

wonder, but then they have a very hard time understanding the newspaper: "why," they ask, "does the newspaper talk about interest rate changes instead of shifts in the LM curve?" Brad de Long. (My comment on this: I wish more students would ask this question, and more so other professors teaching macro!)

Below is the flawed justification provided by Mankiw for IS/LM, then my comments in red font.

"Sec 11.1: What is the Fed's Policy Instrument – The money supply or the interest rate? **Our** analysis of monetary policy has been based on the assumption that the Fed influences the economy by controlling the money supply i.e. shifts in the LM curve. By contrast, when the media report on changes in Fed policy, they often just say that the Fed has raised or lowered interest rates. Which is right? Even though these two views may seem different, both are correct, and it is important to understand why….. In recent years, the Fed has used the *federal funds rate*—as its short-term policy instrument." Mankiw 6th ed.pg 313. (Note: Latest edition 2012 his defence of IS/LM is milder. VM)

## Mankiw is wrong, first analytically and then factually regarding the validity of IS/LM.

Analytically: First and foremost, targeting the interest rate versus bank reserves are not views, but operating procedures in the inter bank market. Just as you cannot simultaneously drive a car and two wheeler, you cannot simultaneously target the interest rate and the money supply. There can be only one vehicle or operating procedure. One can have a view as to which procedure is better, but that is an entirely subsequent matter.

More specifically, if BKR is exogenous, R is endogenous, and vice versa, just as for Price and Quantity in microeconomics. Mankiw is trying to justify the use of IS/LM by saying that, if both procedures lead to the same result, are they not equivalent? Is not fixing BKR the same thing as indirectly fixing R? Let us discuss this.

Algebraically, suppose the demand curve for Bank Reserves is BKR = α – β*RATE. Then R or RATE is just a linear transformation of above. In the RBI case discussed, the equivalence implies that when the central bank increases BKR by say Rs. 50 crs, the equivalent fall in the repo rate is say 25 bps, depending on the values of α and β. For it to achieve this target of 25 bps cut, the central bank should know the α and β of the demand curve for BKR. But it does not. And why not simply target R directly?

Further, the demand curve for bank reserves is stochastic, not deterministic
i.e. BKR = α - β*RATE + Error. Now errors or shifts in BKR at any given R will occur due to say quarterly tax payment outflows on a certain day. Hence the demand curve for BKR shifts randomly and hugely most of the time. Then the rate R corresponding to a Rs 50 crs increase in BKR might end up at say 7.55% or 7.95% and not 8%. At the open market desk, the economic outcomes of the two procedures are different, and much more so as the effects of the alternative procedures cumulate across the wider economy.

## Second factually: Let us evaluate the following passage from Mankiw:

Sec 18.1: Financial Innovation, Near Money and the Demise of the Monetary Aggregates. "In Feb 1993, Fed Chairman Alan Greenspan announced that the Fed would pay less attention to the monetary aggregates that it had in the past… Since then, the Fed has conducted policy by setting a target for the *federal funds rate*….. It adjusts the target interest rate in response to changing economic conditions." Mankiw 6th edition pg 525

Mankiw suggests that after 1993 Fed moved to interest rate procedure: As a purely factual matter, except during October 1979 to August 1982, the Fed Funds rate has generally been the instrument or operating target from 1950 onwards. However, from Feb 1994 onwards, the Fed disclosed its fed funds target rate. The disclosure was new, not the target rate. In late 1990s the Federal Reserve Board in Washington D.C. even stopped publishing money supply data! Besides there are several money supply measures, but just one policy rate. All Central Banks use the policy rate as the operating target, pointing to the global invalidity of IS/LM. At quarterly or annual frequency some money supply measure can and has been used as an intermediate target, but very rarely as the overnight money market operating target.

There are many more problems with the IS/LM framework, some we will discuss in Ch 9. Ohers require going into financial economics. For the purposes of basic macro, all you need to know is that the short-term interest rate is chosen by central bank, and so it cannot be determined by the intersection of hypothetical IS & LM curves. Second the central bank changes this policy rate in response to inflation etc as we shall see in Chap 9.

Various pitfalls of IS/LM are dealt with in Ch 9: Linking Inflation, Interest Rates and Output; Ch 11: The Loanable Funds Approach to the Real Interest Rate and Ch 17: The Post War Evolution of Monetary Policy)VM. Chapter numbers refer to my text in progress titled Macroeconomics: An Integrated, Financial Approach (MIFA). More on my website **economicsperiscope.com** (vivek.moorthy@iimb.ernet.in Professor, IIM Bangalore).