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Akila Weerapana

Lecture 8: The Channels of Monetary Transmission

I. OVERVIEW

- In the AD-IA model, as well as in the IS-LM model, short-term interest rates are assumed to be the mechanism by which the monetary policy maker is assumed to affect the real economy.
- Although such a model is good enough for basic analysis, it ignores many important details about how monetary policy works in reality. This section of the class takes a closer look at some of the subtleties.
- The last lecture examined how to identify the impact of monetary policy on the economy. Today's lecture looks at different channels, other than through short-term interest rates, through which monetary policy affects the real economy. The next lecture takes a closer look at the interest-rate channel.

II. OVERVIEW OF THE MISHKIN PAPER

- The basic motivation behind the Mishkin paper is the recent increase in interest in monetary policy as THE primary tool in minimizing economic fluctuations in the economy. As we talked about in the beginning of class, Alan Greenspan, not the U.S. Congress, is who agents in the economy typically turn to for solace in bad times.
- Mishkin argues that along with this interest in monetary policy as a stabilization device, it is necessary to have a good understanding of how exactly monetary policy affects the real economy: in other words, when the Federal Reserve pursues expansionary or contractionary monetary policy, how exactly do those policy changes affect real economic variables like GDP.
- Unless they know more about the different ways in which monetary policy affects the real economy, monetary policy makers will always be facing uncertainty about how much or how little to move their policy tools. Accordingly, this uncertainty will lead the monetary policy maker to move these policy tools by too much or too little, to move too early or too late adding uncertainty into the economy.
- So the goal of Mishkin's paper is to provide an overview of these different channels, and identify important lessons for the conduct of monetary policy that can be drawn from the different channels of transmission
- Mishkin identifies the following channels:

  1. Interest Rate Channels
  2. Other Asset Price Channels (including Exchange Rates, Equity Prices, Real Estate)
  3. Credit Channels (including the Bank Lending Channel and the Balance Sheet Channel)

III. CHANNELS OF TRANSMISSION

The Interest Rate Channel

- The most commonly discussed channel, in which an increase in the money supply lowers the real interest rate, which in turn stimulates investment and therefore GDP. The effect of monetary policy on the real interest rate works through an assumption of sticky prices: lower nominal interest rates translate into lower real interest rates with the assumption that prices are fixed in the short run.
- The first thing to keep in mind is the relationship between the nominal and real interest rate. This relationship is most often expressed as the *ex-ante* real interest rate = nominal interest rate - the expected rate of inflation: $r = i - \pi^e$. In other words investment decisions are based on the real cost of borrowing, which depends on the (known) nominal interest rate and the (uncertain) inflation rate.
- Since expected inflation is not always easy to measure, we often work with the *ex-post* real interest rate. This is further simplified as $r = i - \pi$ where we use the actual inflation rate rather than the expected inflation rate.
- The IS-LM model or the AD-IA model both also gloss over the fact that the real interest rate that matters for consumers and investors is typically a long-term real interest rate. The link between short-term interest rates and long-term interest rates is also an important concept to understand: we will cover this in a subsequent lecture.
- We can summarize the relationship as

$$M \rightarrow i_{FF} \rightarrow r_{FF} \rightarrow r \rightarrow I, C \rightarrow Y$$

- This is a very complicated relationship that we glossed over in constructing both the IS-LM and AD-IA models. The first step of the relationship is that to stimulate (contract) the economy the central bank increases (decreases) the money supply (M), lowering (raising) a short-term nominal interest rate, such as the Federal Funds rate (i_{FF}). The assumption here is that the Fed has the capability to conduct open market operations such that it can vary the money supply to move the Fed Funds rate in the desired direction.
- The next step is that lower (higher) short-term nominal interest rates result in lower (higher) short-term real interest rates (r_{FF}). This of course depends critically on the assumption of sticky prices in the short-run.
- The third step is that lower (higher) short-term real interest rates result in lower (higher) long-term real interest rates (r), this makes the link between short-term interest rates and long-term interest rates critical to understand.
- Finally, the changes in long-term interest rates must, in turn, stimulate (depress) consumer (C) and, more importantly, investor (I) spending raising (lowering) GDP (Y).
- Even if we do not believe in sticky prices, the interest rate channel may still be active. An increase in money supply can increase expected inflation (because there is more money chasing the same quantity of goods) and lower real interest rates leading to more spending and output. This channel may be particularly important when we think of economies in which the nominal interest rate is constrained to be zero, as it is in Japan.

- Paradoxically then creating higher inflation expectations can be *beneficial* for an economy undergoing a deflationary episode. Even though it seems counter-intuitive it really is not: the core feature of a deflationary trap is that the possibility of lower prices in the future leads firms and consumers to delay spending, this drives the economy deeper into recession making the deflation worse. Creating inflationary expectations reverses that contraction in spending. We will take a closer look at the situation in Japan at the end of the semester.

The Exchange Rate Channel

- Another channel through which monetary policy can affect GDP, and one that is sometimes modeled in the IS-LM model, is through the impact on exchange rates.
- The basic idea is as follows: when the central bank increases the money supply, it lowers short-term nominal interest rates and thus lowers short-term real interest rates as well. Lower short-term real interest rates imply that dollar denominated assets are less attractive than foreign assets leading to a decrease in demand for dollars.
- The subsequent depreciation of the dollar makes domestic goods cheaper than foreign goods and leads to an increase in Net Exports, and therefore in GDP as well.
- We can summarize the relationship (where r_w denotes interest rates in the rest of the world) as

$$M \rightarrow i \rightarrow r \rightarrow (r - r_w) \rightarrow \text{Nominal Exchange Rates}(e) \rightarrow NX$$

- For small open economies with flexible exchange rates, this can be a particularly important channel of transmission. The reason why some small open economies choose to adopt fixed exchange rates can also be understood from this equation: when the exchange rate is not allowed to change then domestic interest rates must be equal to world interest rates, thus the monetary policymaker is rendered toothless.

The Equity Price Channel

- Mishkin emphasizes two equity price channels: Tobin's Q and wealth effects. Tobin's Q is a widely used theory of investment, which states that $Q = \frac{\text{Market Value of Capital}}{\text{Replacement Cost of Capital}}$
- When Q is high, firms will invest more either because adding capital is cheap or because the value of installed capital is high. Conversely when Q is low they will invest less
- Expansionary monetary policy can lead to a higher Q - either because market interest rates are falling leaving people with less attractive alternatives or because they have more money to spend, therefore they buy more stocks. Higher stock prices (a higher market value) leads to a higher Q and more investment.
- The wealth effects aspect of the equity price channel rose to prominence during the great stock boom, and subsequent great stock collapse of 1999-2000. The increase in the price of stocks that follows a monetary expansion raises household wealth and leads individuals to spend more money. It could also be the case that higher demand for stocks increase the value of companies and enables companies to borrow and spend more freely as well.

- The most obvious example of a wealth effect is the large increase in the value of dot-coms in the 1996-1999 period. The incredible stock valuations encouraged lavish spending by stock holders (see the San Francisco housing market) and by firms (see the San Francisco office space market). The boom in dot-coms, although illustrating the wealth effect, does not constitute a good example of the equity price channel because it is not clear that the boom arose as a result of lower interest rates.

- However, it is certainly true that the tightening of interest rates in 2000 contributed to the collapse of the dot-com sector stock prices and led to a subsequent contraction in spending by both stock holders and firms, as the changes in the San Francisco housing and office markets have borne out.

- As Mishkin points out, one of the most important wealth effects comes from the real estate market. Lower interest rates mean lower mortgage rates which in turn make the demand for houses, and house prices higher. Since the biggest chunk of wealth owned by families is their house, this is an important channel of transmission for creating wealth effects.

- In recent times this channel has become very important: especially when lower interest rates led to a boom in housing that kept the economy afloat in 2001. The real estate market can work in the opposite direction as well - in East Asia and in Japan collapses in the real estate market led to substantial decreases in wealth and reduced spending.

- In the United States there has been some recent concerns about financial and accounting problems at Fannie Mae and Freddie Mac the two large federally-chartered financial institutions that packages and sells mortgage backed securities. Since the existence of a market for mortgage backed bonds allows many more lenders to enter the lending market it can help keep rates competitive and increase home purchases. If these institutions are seen to be on shaky financial footing, their bonds will be less attractive driving yields higher forcing lenders to charge higher rates as well.

The Bank Lending Channel

- Some combination of the above channels are what are typically discussed in undergraduate economics courses. There are two other important channels which do not get as much attention in undergraduate economics courses but are as, if not more, important. These two channels are the bank lending channel and the balance sheet channel.

- The bank lending channel arises from a market failure related to information asymmetries between borrowers and lenders. The basic intuition is as follows: borrowers and lenders have a hard time matching up because information about each other is very costly to verify. In particular lenders have a very hard time evaluating the viability of an investment project run by a borrower about whom they know very little. Similarly, borrowers may have a hard time finding lenders who are looking for projects similar to their own to invest in.

- In this type of world, banks become valuable financial intermediaries: bringing together borrowers and lenders. Lenders only need to have information about the viability of the bank because that is where they are putting their money, and banks have more resources and better ability to screen borrowers, some of whom are repeat customers. This channel becomes especially vital for small firms, which are unable to offer shares on the stock market or issue their own bonds to raise money.

- In this type of a world, an expansionary monetary policy leads to more reserves and deposits at the bank, which in turn makes more loans available. The increased supply of loans implies that many more smaller firms can get access to loans and therefore undertake more investment projects leading to more investment and higher GDP.
- Mishkin does mention that there is some research evidence that the importance of banks in the lending channel is fading and that banks may also choose to to explore alternative investments instead of loans.

The Balance Sheet Channel

- The balance sheet channel is similar to the bank lending channel in that it is related to information asymmetries: namely the problems of moral hazard and adverse selection in financial markets.
- The basic gist of the argument is as follows: lenders are always concerned that borrowers may be unable to repay their loans. This problem is most acute for firms with low net worth: the lender has to wonder if the reason that a low net-worth borrower is coming to him is because no one else is willing to lend to a borrower who may go under at any time (the adverse selection problem).
- The lender also has to wonder whether giving an increased loan to a low net-worth form may make that firm pursue risky investment projects, increasing the likelihood of project failure since the owner of the firm has little to lose if the firm goes under (the moral hazard problem).
- In this type of world, expansionary monetary policy can affect the balance sheets of firms in numerous ways: lower interest rates which increases cash flow, higher equity prices, inflation that reduces value of liabilities, higher aggregate demand which raises business revenues and profits etc. Enhanced balance sheets reduce the moral hazard and adverse selection problems and lead to more access to funds for borrowing firms and therefore stimulates more economic activity.
- Mishkin also examines the possibility of balance sheet effects on households: consumer cash flow and balance sheets should improve when credit card, student loan, and mortgage interest rates fall, thus enabling consumers to invest more in items like consumer durables and housing which are generally considered to be illiquid and "big ticket" items to be avoided in times of financial uncertainty.
- These credit channels often come into heightened interest in periods following financial crises. The importance of cleaning up the Savings and Loan scandal in the United States, the impact of bank failures and contractionary monetary policy in creating the Great Depression, the failure of Japan to clean up their banking sector, putting in regulations that prevent the type of crony lending that plagued banks in East Asia, opposition to IMF suggestions to tighten interest rates to defend currencies facing financial crises, are all rooted in credit channel related concerns.
- After identifying these myriad different channels, Mishkin assesses the logical follow up question: how important are these channels relative to each other? The economic research on this question is by no means conclusive. Mishkin suggests that some authors believe in a strong interest rate channel but other authors do not believe this to be the case. Some have argued

that the right way to think about this question is that the credit and asset channels magnify and propagate the interest rate channels.

- Mishkin believes that the credit channel is very important in propagating monetary policy decisions to the real economy. In my opinion, there is no conclusive proof refuting any of these channels so we have to remain open to all of them. At different points in time channels like the equity price channel, housing wealth, exchange rate etc. have all proved to be important factors in determining the impact of monetary policy on the real economy.

IV. LESSONS FOR MONETARY POLICY MAKERS

- Mishkin's paper concludes by drawing four lessons for monetary policy makers.

    1. Don't focus only on nominal interest rates
    2. Asset prices are important indicators of the stance of monetary policy
    3. Monetary policy can work even in a zero nominal interest rate environment
    4. Price stability should be the goal of monetary policy makers.

- Let's do a quick overview of these 4 arguments. The first is that policy makers should be careful to think about real interest rates and not just nominal interest rates. He cites examples of the 1970s where nominal rates were high and the Great Depression where nominal rates were near zero. This does not indicate much information about the stance of monetary policy because the high inflation in the 70s meant that real interest rates were in fact negative whereas the deflation of the Great Depression meant that real interest rates were in fact positive. So sometimes, high nominal rates can be associated with a loose monetary stance and low nominal rates with a tight monetary stance.

- The second point reiterates what I stated at the end of the previous section: at different times various asset prices: the stock market, the housing market, the exchange rate, etc. have been important determinants of the real economy and the effect of monetary policy on these asset markets is an important channel of transmission. So even though we think of the interest channel as the main channel in setting up models like IS-LM or AD-IA, reality is much more complicated.

- The third point is one that we will return to at the end of the semester, it basically states that just because nominal interest rates are zero, does not mean that monetary policy is impotent. Why is this important? Recall that nominal interest rates can never be negative: you would not put your money in the bank if they paid you a nominal interest rate of less than zero: you would prefer to keep it in your house.

- With basic IS-LM type analysis, we would have to conclude that expansionary monetary policy is ineffective in an economy with a nominal rate of zero because interest rates could not fall below this floor. However, the existence of the other channels of transmission, as well as the impact of expected inflation on the real interest rate mean that the real economy can be stimulated by monetary policy makers even when interest rates are near zero. These include policies (open mouth operations) that affect long-term interest rates and expected inflation matter.

- The final point is that price stability is very important because it reduces uncertainty and helps minimize fluctuations in output. Mishkin points out that fluctuations in prices (whether inflationary or deflationary) are important influences on the real economy.