

CHAPTER THIRTEEN: INTEREST RATE DETERMINATION

MACROECONOMIC CONTEXT

Domestic monetary policy is directed at influencing interest rates in order to influence inflation rates. Other reasons to increase interest rates include:

- Excessive growth in GDP;
- Excessive balance of payments deficit;
- Rapid growth in credit and debt levels;
- Excessive downward pressure on foreign exchange markets.

The effects of an increase in interest rates include:

- Increase in long-term interest rates;
- Slowdown in consumer spending;
- Reduced inflation and demand for imports;
- Decrease in size of current account;
- Possible attraction of foreign investment causing domestic currency appreciation.

The three effects of changes in interest rates are:

- **Liquidity Effect:** The central bank increases interest rates by selling government securities in order to reduce the money supply and hence liquidity. Reduced liquidity increases the risk of holding financial instruments and hence interest rates increase to compensate.
- **Income Effect:** Increased interest rates (from the liquidity effect) reduces spending and investment in all sectors of the economy, reducing demand for loans and hence reducing interest rates. This is essentially a self-balancing effect.
- **Inflation Effect:** Reduced demand for loans caused by the income effect reduces the inflation rate. As the inflation rate is a component of the interest rate, this also decreases the interest rate, exacerbating the self-balancing effect.

Economic indicators can be used to forecast possible future economic growth and the likelihood of central bank intervention. These include:

- **Leading Indicators:** Economic variables that change *before* a change in the business cycle.
- **Coincident Indicators:** Economic variables that change *alongside* a change in the business cycle.
- **Lagging Indicators:** Economic variables that change *after* a change in the business cycle.

LOANABLE FUNDS APPROACH

Loanable funds are the funds available in the financial system for lending. The loanable funds approach assumes a downward-sloping demand curve, and an upward-sloping supply curve, in the loanable funds market.

Demand for loanable funds comes from:

- **Business Sector:** Short-term working capital and long-term capital investment (downward-sloping demand curve).
- **Government Sector:** Finance budget deficits and intra-year liquidity (zero-elasticity vertical demand curve).

increase, and long-term interest rates will decrease, due to supply of short-term securities decreasing and supply of long-term securities decreasing.

- The segmented markets theory denies the existence of investors seeking arbitrage opportunities and speculative profit.
- **Liquidity premium theory:** Investors prefer short-term instruments due to their greater liquidity (meaning lower maturity and interest rate risk), and hence require more compensation for long-term investments. This compensation is a “liquidity premium”. This can essentially be introduced into the expectations theory equation; the theory is an extension upon expectations theory. E.g. $i_2 = (i_1 + E(i_1) + L)/2$

RISK STRUCTURE OF INTEREST RATES

Default risk is the risk that the issuer fails to make interest payments. Government bonds are assumed to have zero default risk; corporate bonds are assumed to have non-zero default risk. Investors require compensation (higher interest rates) for bearing the extra default risk; this is a *risk premium*.

CHAPTER FIFTEEN: FOREIGN EXCHANGE MARKETS

EXCHANGE RATE REGIMES

Major types of exchange rate regime are:

- **Free float:** Exchange rate determined entirely by supply and demand, little or no central bank intervention.
- **Managed float:** Exchange rate determined primarily by supply and demand; central bank intervenes to hold the exchange rate within a defined range.
- **Crawling peg:** Exchange rate allowed to change in controlled steps over time, but short-term fluctuations are very strictly limited by central bank intervention.
- **Fixed rate:** Exchange rate fixed to the value of another currency or basket of currencies; central bank constantly intervening to control exchange rate.

FOREIGN EXCHANGE MARKET PARTICIPANTS

Major foreign exchange market participants include:

- **Foreign exchange dealers:** Financial institutions (usually commercial and investment banks) that quote two-way prices and act as principals in the foreign exchange market; usually licensed or authorised by their domestic central banks.
- **Foreign exchange brokers:** Transact almost exclusively with foreign exchange dealers; they obtain the best prices in global foreign exchange markets by matching foreign exchange dealers' buy and sell orders for fees.
- **Central banks:** Enter the foreign market to influence the exchange rate, manage foreign exchange reserves, or purchase foreign currency to pay for government international transactions or debt.
- **Firms conducting international transactions:** Importers and exporters use foreign exchange markets to buy and sell foreign currency to purchase and sell goods.
- **Investors and borrowers in international markets:** Commercial bank foreign borrowings must be converted into the home currency; corporations and financial institutions investing

Relative inflation rates influence the price of foreign goods by domestic consumers, and hence their domestic demand. The change in demand for imported goods in turn affects demand for foreign currency to purchase the goods.

RELATIVE NATIONAL INCOME GROWTH RATES

Change in relative national income growth rates will affect domestic demand for foreign imports, affecting the supply of the domestic currency and hence its value. Note that a secondary effect will be a change in foreign investment in the domestic country – as these two effects influence the exchange rate inversely, this has a mitigating effect.

RELATIVE INTEREST RATES

Changes in relative interest rates affect the supply and demand of the domestic currency. E.g. increase in the domestic interest rate increases demand for the domestic currency (by foreign investment) and decreases supply of the domestic currency (by reduced domestic investment in foreign countries), appreciating the domestic currency. Expectations about the value of the currency during the investment period are also relevant. Additionally, if the nominal interest rate has only changed due to a change in the inflation rate, the currency may not in fact appreciate (and may depreciate). If the nominal interest rate has changed due to a change in the real interest rate, the currency will appreciate.

EXCHANGE RATE EXPECTATIONS

Changes in exchange rate expectations are a considerable source of turnover in the foreign exchange market. Exchange rate expectations are based on expectations about future changes in relative inflation, relative income growth, and relative interest rates.

CENTRAL BANK INTERVENTION

Policies by domestic and foreign central banks may affect the relative rates of inflation, income growth or interest rates between the countries. The market participants' expectations that central bank policy may shift can also affect these variables. Central banks may influence currency by:

- **Intervening in international trade flows:** E.g. subsidies, tariffs, quotas, embargoes.
- **Intervening in foreign investment flows:** See above.
- **Directly intervening in the foreign exchange market:** Trading in the foreign exchange market to affect the foreign exchange rate.

CHAPTER NINETEEN: FUTURES AND FORWARDS

MAIN FEATURES OF A FUTURES TRANSACTION

A **futures contract** is the right to **buy a specified item**, at a **specified future date**, at a **specified price**.

- A **long** position in a futures contract is an agreement to buy the asset in the future;
- A **short** position in a futures contract is an agreement to sell the asset in the future.

Futures contracts and forward rate agreements are *derivatives* – they derive their price from an underlying physical market product. **This means that the price of a futures contract is identical to the price of the underlying market product!! Also note that futures contracts interest rates are quoted as 100-i; e.g. a 8.5% interest rate is "at 91.5"**. Derivative contracts may be derived from the price of:

- **Over the counter markets**
- **Exchange traded markets**
 - Transactions recorded through a clearing house;
 - Clearing house operates as a counterparty to the buyer and seller, creating two options contracts through novation;
 - The clearing house allows buyers and sellers to close out their contracts.
- **International options markets**
 - Exchange in a particular country will usually specialise in options contracts related to physical or futures market products also traded in that country;
 - Trading on international exchanges varies (some still use open-outcry trading);
 - International links between exchanges allows 24-hour trading.
- **Australian options market**
 - *Options on futures contracts*: traded on the ASX, underlying asset is a futures contract, options on futures available for:
 - 90-day bank-accepted bills;
 - SPI200 index futures contracts;
 - 3-year and 10-year Commonwealth Treasury bonds;
 - Overnight options on Treasury bonds and share price index futures contracts.
 - *Share options*: traded on the ASX, based on ordinary shares of specified listed companies.
 - *Low-exercise-price options*: traded on the ASX. A highly leveraged option on individual stocks with tiny individual exercise price and a premium similar to the price of the underlying stock. European options (exercisable only at expiration date). Available for a range of high-liquidity stocks.
 - *Warrants*: traded on the ASX. Includes equity warrants attached to debt issues made by companies (the option to convert debt to ordinary shares of the issuing company) and warrants issued as financial products by financial institutions.
 - *Over-the-counter options*: Options that are not traded on the ASX, such as semi-government securities and other securities with unusual maturities. Used to set interest rate caps, floors, and collars. Allows flexibility in terms of:
 - Amount;
 - Term;
 - Interest rate;
 - Price.

OPTION CONTRACT PREMIUM PRICING

There are four factors determining the option premium:

- **Intrinsic value**: The market value of the underlying asset relative to the exercise price; positively correlated with option premium. Options with positive intrinsic value are “in the money”; options with zero intrinsic value are “at the money”; options with negative intrinsic value are “out of the money”. The intrinsic value of a call option is equal to $S - X$; the intrinsic value of a put option is equal to $X - S$.
- **Time value**: The longer the time to expiry, the greater the possibility that the option will move into the money (and adverse movement in the spot price is limited by the premium), meaning that time to expiry is positively correlated with option premium.