Macroeconomics A; EI060

Quiz

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Class of March 12, 2025

1 Precautionary savings

Question: What is the concept of precautionary savings? Is it always present in a situation where income is uncertain?

Answer: Precautionary savings denotes a situation where consumption in the first period is lower than what it would be if future output was certain, with the same value as the expected value of uncertain output.

The intuition is that uncertainty tends to raise the expected marginal utility of future consumption. This brings an additional reason to save and reduce current consumption. The purpose of the saving is to limit the pain (high marginal utility) when output is low.

For the marginal utility to be convex, we need the second derivative of the marginal utility (which is the third derivative of the utility) to be positive. This is the case in CRRA utility functions, which include the log utility. It is however not the case in the linear - quadratic utility (also called mean - variance utility). In that case, the current consumption is linked to the expected future consumption. The form is just the same as in the certain gain, the only difference being that certain future consumption is now replaced with the expected future consumption.

2 Complete markets

Question: What are complete markets?

Do complete markets mean that countries face identical situations thanks to financial trading?

Do we need a broad range of assets for financial markets to be complete?

Answer: Markets are complete when there are enough assets to cover all possible states of nature.

In that case, agents can insure their consumption, for instance buying assets that pay off when their income is low and selling assets that pay off when their income is low. We assume agents do not default and make the payment in a state for which they sold the asset.

Complete markets do not make agents equal. It makes their consumption pattern evolve in parallels across times and states of nature. So when world output is abundant, all agents see their consumption increase in proportion. In other words, market insure idiosyncratic shocks (we move in parallel) but not aggregate shocks (we all move). The parallel movements of consumptions does not mean that they are equalized. An agent with a higher income will always consume more.

We don't necessarily need a broad range of assets. What we need is enough assets to fully cover the shocks. This can be through state contingent securities, but it can also be with assets whose payoff is proportional to the shocks. For instance, if all goods are traded, having one asset proportional to Home endowment and another proportional to Foreign endowment (i.e. equity) delivers full market, as each asset is linked to one of the shocks, and we have as many assets as we have shocks.

3 Consumption and real exchange rate

Question: If asset markets are complete, what is the link between consumption and the real exchange rate?

Answer: With complete markets, the ratio of marginal utilities in a state (which is inversely proportional to the ratio of consumption) is equal to the real exchange rate times a constant.

When agents have effectively purchases and sold insurance through asset market, the marginal utility of one unit of say Home currency is the same regardless who gets it. If the home agent gets it, the currency translates into $1/P^H$ unit of good, with marginal utility $u'\left(C^H\right)$. If the Foreign agent gets it, the unit of Home currency translates into $1/S$ units of foreign currency, hence $1/\left(SP^F\right)$ units of good , with marginal utility $u'\left(C^F\right)$. If the two are equal we get:

$$\begin{aligned} \frac{1}{P^H}u'\left(C^H\right) &= \frac{1}{SP^F}u'\left(C^F\right) \\ \frac{u'\left(C^F\right)}{u'\left(C^H\right)} &= \frac{SP^F}{P^H} \end{aligned}$$

In general, this equality holds with a scaling factor that reflects different initial conditions, for instance with one country being wealthier than the other.

4 Portfolio choice

Question: When agents can invest in many assets, what is the arbitrage condition? Do assets need to deliver similar expected returns?

Answer: The arbitrage come from combining the Euler conditions for various assets.

The resulting expression states that the expected discounted return needs to be the same for all assets. This is different than the expected return, as we weight the return by the marginal utility of consumption. This is because getting one extra franc when poor is not the same thing as getting it when rich.

We thus can have an asset with a lower expected return than other assets, provided it delivers a good hedge. That is, it pays off (more than the other assets) when marginal utility of consumption is high. The lower expected return is effectively an insurance premium that the investors pays to get the hedging.

5 Home bias

Question: What is portfolio home bias? What are models that can deliver it?

Answer: The bias indicates a situation where investors hold a larger share of their portfolio into domestic assets than the share of their country in the world.

This can be puzzling. The purpose of portfolio is to hold assets that deliver a high return when other sources of income, such as labor income do not. In other words, investors want to hedge labor income risk.

With productivity shock, a high Home productivity raises the income of all factors, so Home capital (equity) pays off well when labor income is high. The Home equity is then a bad hedge, and the investor should actually have a foreign portfolio bias.

Things are different with sticky prices. The revenue for sales for a firm is then set, unless the central bank reacts for instance (output is demand determined). A higher productivity reduces the amount of labor needed in production. Profits are then high, and wages low. In that case, holding Home equity is a good hedge for Home labor income.

Home bias can occur when in addition to equity investors hold bonds. Bonds deliver a certain payoff in the currency in which they are denominated, but a risky payoff in other currencies. The only risk of bonds is then exchange rate risk, and one can use the bond portfolio to hedge such exchange rate risk. This include real exchange rate risk, which relates to productivity differences. Equity investment then focuses on other risks, and this can lead to bias.