

# Macroeconomics A; EI060

## Quiz

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### 1 Motivation to default

**Question:** When a country can invest and borrow in a bond, and faces a up-down income process.

Why would it want to default?

Is default always a concern?

**Answer:** Without any default risk, the country wants to smooth consumption. It saves when income is high and borrow when income is low.

There is no incentive to default in periods when income is low, as the country then borrows and needs the foreign investment. When income is high, the country has to repay its debt. There is then a risk that it may want to default.

Default is an issue only when the country is a debtor at some point. If it starts with positive assets, the smoothing pattern requires having an asset position that alternates between low and high values, but is never negative. There is thus never a debt, hence no issue of default.

### 2 Exclusion and domestic cost

**Question:** Is exclusion from world market a credible way to limit default?

What about a situation where default disrupts the private sector and reduces output?

**Answer:** Full exclusion is a strong assumption, as it implies that the country is excluded even when it wants to save. This is not realistic.

Empirically, a country that has just defaulted is a low risk country as it has a low debt burden. Investors may then want to start lending to it again. This happens in practice, and default is not empirically followed by exclusion.

If default leads to lower GDP, this is more realistic as it reflects the disruption in credit markets (including for private firms) and not a non-credible exclusion threat. If the cost is not too high in

present values (which can also be the case if a high cost does not last long), the disruption is too small to prevent default.

### 3 Endogenous premium

**Question:** In the framework with endogenous default risk and risk premium, when output is risky, does a lower cost of default  $\phi$  impact the risk premium?

**Answer:**

At first we may think so, because the lower cost makes default more appealing. The risk of default and interest rate should then go up.

But the debt amount is endogenous. The reduction of  $\phi$  implies that the optimizing country chooses to borrow less, leaving the debt / cost ratio unchanged. This adjustment is enough to stabilize the risk of default and the risk premium.

### 4 Insurance and default

**Question:** Consider the case where payment is not in form of a bond with set interest rate, but in form of a contingent contract, linked to the realization of output.

In the absence of default, what is the outcome of the contract?

How does default affect the insurance? Does it make it impossible?

**Answer:** The efficient contract calls for risk to be moved from the risk-averse borrower to the risk neutral investor. Consumption is perfectly smoothed across states of nature.

The optimal contract calls for the country to make a payment to the world when it has a high income. It may opt to default instead.

When default is a risk, consumption can be smoothed across the states of nature where income is low and the country then receives money, or only pays a little. The level at which consumption is smoothed is however lower than in the first-best contract. Over the states where income is high, it is still the case that the country makes a payment to the rest of the world, but this is limited in line with what the world could seize. Insurance is thus partial: higher income means higher consumption, but less than one for one.

Default thus does not make insurance impossible, but it makes it less efficient.

### 5 Moral hazard

**Question:** Consider a country that borrows, and can lend the money back or invest in raising its output.

If the information is perfect, does the income of the country  $Y_1$  matter?

If the lender cannot see what the borrower do with the money, is there a risk of the borrower reinvesting abroad? Why? What is the impact of  $Y_1$  ?

**Answer:** In the absence of friction, the income level  $Y_1$  plays no role. Optimal investment is such that the interest rate is equal to the expected return of investing in output. There is no reason to borrow money and reinvest it right away in the bond market, at the same interest rate.

With the information friction, nothing is paid back in case of failure. The borrower then has an incentive to put money in a safe bond (and keep it in case of failure) instead of investing it in the risky project. The borrower limits the amount of lending to ensure that money is not wasted in that way. When the loan is limited, the borrower finds it better to invest in the risky project. When income  $Y_1$  is higher, the borrower has more at stake, and thus is less willing to hide the money. This allows for a larger loan and investment.