Liquidity Constraints

— Week 5 —

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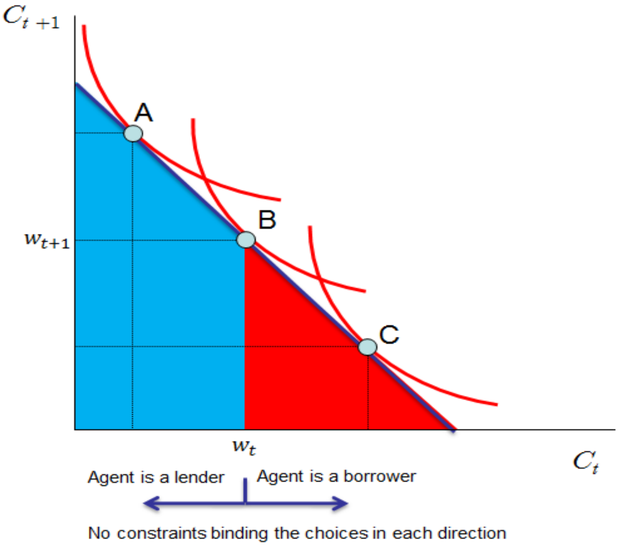
Summary

I – Liquidity constraints

The liquidity constraint problem

1. Up to now, we have assumed that the agents face **no debt constraint**
2. **Any transaction** between current and future consumption is possible.
3. Whenever one agent wants to increase current consumption, there is always some other agent that wants the opposite.
4. If there is a mismatch between the savings of some and the debt intentions of others, the relative price of intertemporal consumption will change $(1 + r_{t+1})$, so that equilibrium will be reestablished again
5. That is, up to now: **MARKETS WERE COMPLETE**
6. What happens if markets are not complete? If some agents are faced with debt constraints?

The no-liquidity constraint case



Binding versus Non-Binding constraints

1. Let's call negative savings by

$$a_{t+1}^{-}$$

2. Negative savings have to be financed through **borrowing**
3. Let us say that the maximum amount of borrowed funds is called by

$$A$$

4. Therefore, if one ... **can not borrow more than** that value at t, then

$$a_{t+1}^{-} \leq A$$

Binding versus Non-Binding constraints (cont.)

1. Solution: totally equal to the solution with complete markets
2. The only difference now is that these constraints should apply

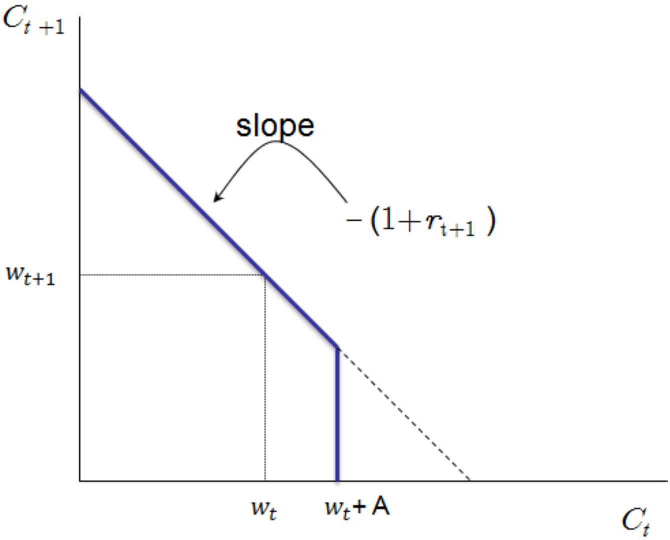
$$\begin{aligned} a_{t+1}^{-} &\leq A \\ c_t,\ c_{t+1} &\geq 0 \end{aligned}$$

3. No Ponzi game: at $t+1$ the borrower must be able to repay debt

$$(1 + r_{t+1})\, A < w_{t+1}$$

4. Binding versus Non-Binding constraints:

$$\begin{aligned} a_{t+1}^{-} &= A \quad , \quad \text{Binding} \\ a_{t+1}^{-} &< A \quad , \quad \text{Non-Binding} \end{aligned}$$


C_{t+1}
slope
$-(1+r_{t+1})$
w_{t+1}
w_t
w_t+ A
C_t

A binding constraint

1. This occurs if

$$a^{-}_{t+1} = A$$

2. The agent wants to consume more at t, but he cannot do it because he is financially constrained

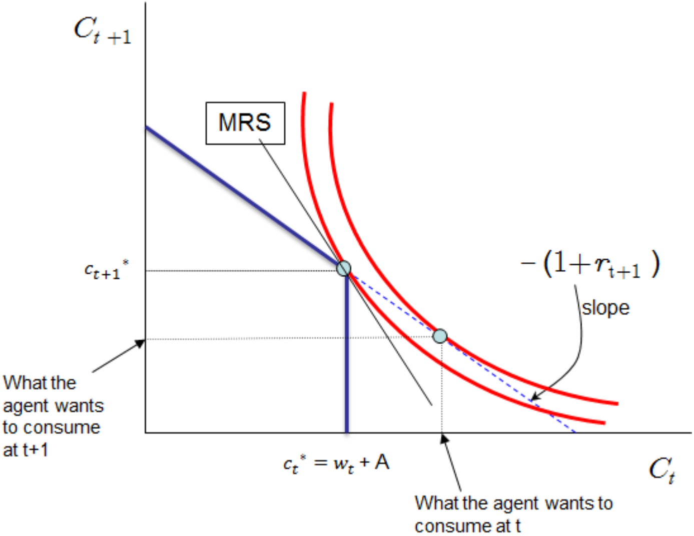
$$MRS > relative\ price$$

3. Mathematically:

$$\underbrace{\frac{u'(c_t)}{\beta \cdot u'(c_{t+1})}}_{MRS_{t,t+1}} > \underbrace{(1 + r_{t+1})}_{relative\ price}$$

4. **Implications**? **Economic inefficiency**: the welfare of our constrained agent is lower than without the binding constraint.

An example of a binding constrain



A non–binding constraint

1. This occurs if

$$a^{-}_{t+1} < A$$

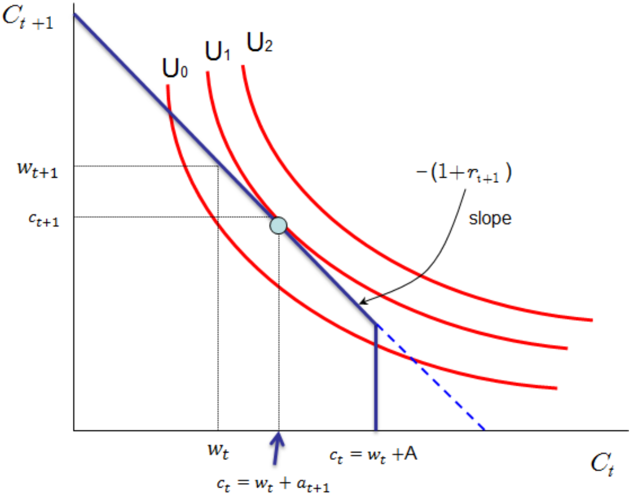
2. Solution totally equal to the solution without debt constraints
3. No economic inefficiency

$$MRS = relative\ price$$

4. Mathematically:

$$\underbrace{\frac{u'(c_t)}{\beta \cdot u'(c_{t+1})}}_{MRS_{t,t+1}} = \underbrace{(1 + r_{t+1})}_{relative\ price}$$

A non–binding constraint example



II – Bibliography

Bibliography

- For this particular topic read:

Eric Sims (2014). *"Intermediate Macroeconomics: Consumption"*, University of Notre Dame. Lecture Notes.

Read only section 5 (pages 28 to 34).

- If you are able to read Spanish, the next reading is also very good:

J.C. Conesa and C. Garriga (2011). *Teoria Económica del Capital y la Renta*, Universitat Autònoma de Barcelona.

Read only section 4.4 of chapter 4.