

Adv. PSE I: Tutorial 02

Severin Weingarten*

November 7, 2012

4 Tax Harmonization (Ch. 2.3)

The model in chapter 2.3 has two main results: Firstly, competitive governments will provide an efficient amount of infrastructure and secondly, the capital tax is not sufficient to finance all infrastructure spending if $\lambda > 0$. The immobile factor (e.g. labor) will be required to cover the remaining costs. This second result is undesirable for various reasons. (see Sinn 2003, p. 45) In class you showed that a **self-financing constraint on capital** is an appropriate remedy for this situation. Here we consider a different policy measure:

- a) Modify the original model (ignore the part about the self-financing constraint) to incorporate **tax harmonization**:

$$\begin{aligned}\tau &= \tau^i = \tau^j \quad \forall i, j \\ \tau &> c_K K\end{aligned}$$

How do the main results of the modified model compare to the results of the original model discussed in class?

Hints:

1. Since the tax is now fixed, the government can no longer set K but has to take it as given. Maximize the government's R assuming that it can only set W but not K . The government takes into account that changes in K will cause changes in W (i.e. $\frac{\partial K}{\partial W}$). This was not the case in the model considered in class, because the government could just set K to whatever value it considered optimal.
 2. Use the firms' first-order-condition to simplify the resulting condition. You should be able to say something about the sign of all variables in this equation except $\frac{\partial K}{\partial W}$.
 3. Use a total derivative of the firms' first-order-condition to show that $\frac{\partial K}{\partial W}$ is always positive.
 4. Look at the equation derived in step 2. Given that we know all the signs, does the result satisfy the Samuelson condition?
- b) How can this result be explained intuitively?

References

Sinn, Hans-Werner. 2003. *The new systems competition*. Malden, Mass.: Blackwell Publishing. ISBN: 978-0-631-21951-4.

*Chair for Public Finance, severin.weingarten@uni-jena.de, <http://sweingarten.de/>